



ALBUQUERQUE DISTRICT WILDERNESS

DRAFT ENVIRONMENTAL ASSESSMENT



MARCH 1983

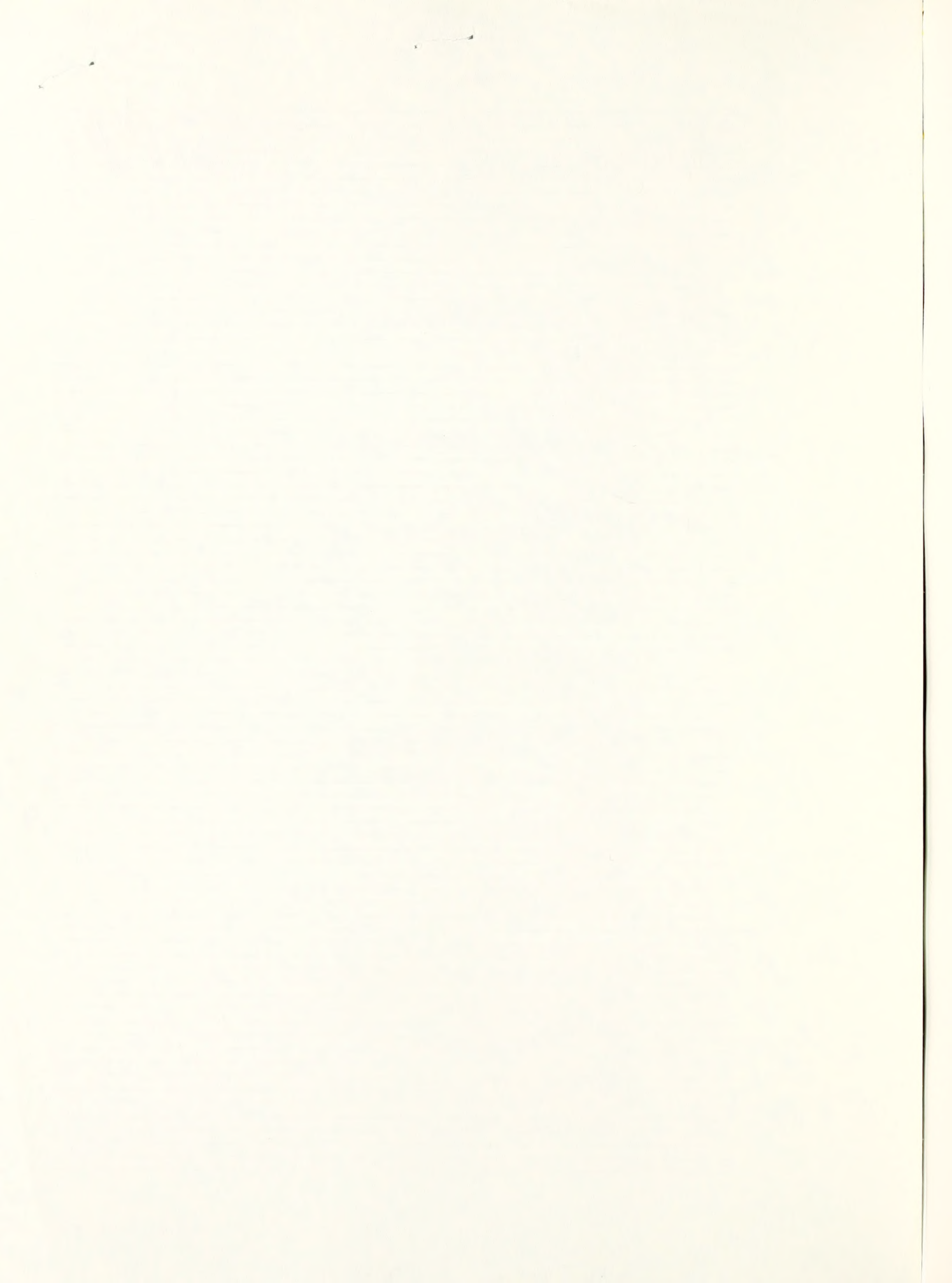
US Department of the Interior
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ERRATA

Page A-30 (Appendix A, Section 6): Paragraph 2 should read, "Under the All Wilderness Alternative, the entire 8,038 acres of public land within the Cabezon WSA would be recommended as suitable for wilderness designation."

Page A-33 (Appendix A, Section 6): Paragraph 4, sentence 1 should read, "Under this alternative 6,475 acres of public land within the Cabezon WSA would be recommended for wilderness designation (refer to Map A)."

NOTICE

In order to keep our mailing list updated and to avoid sending you unwanted wilderness documents, the BLM will be sending copies of the Final Wilderness Environmental Assessments only to those individuals who either (1) submit comments on the Draft Environmental Assessment or (2) request to remain on the wilderness mailing list.



United States Department of the Interior

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Dear Interested Party:

Enclosed is a copy of the Draft Environmental Assessment (EA) for seven of the Bureau of Land Management's (BLM) Wilderness Study Areas (WSAs) in the Albuquerque District. The WSAs are located in Rio Arriba, Sandoval, and San Miguel Counties, New Mexico. This Draft EA is being released for public comment simultaneously with other EAs prepared for WSAs in the BLM New Mexico District Offices of Las Cruces, Roswell and Socorro.

The seven WSAs are located within two Resource Areas of the Albuquerque District. The Area Manager for the Rio Puerco Resource Area is responsible for the following four WSAs: Cabezón, Empedrado, La Lena, and Ojito. The Area Manager for the Taos Resource Area is responsible for the remaining three WSAs: Navajo Peak, Sabinoso and San Antonio.

This Draft EA has been prepared as part of a statewide BLM wilderness study process. This document provides the first opportunity for public comment on the initial wilderness suitability recommendations of the BLM Resource Area Managers. These recommendations are subject to refinement or change by the District Manager in the Final EA, the BLM New Mexico State Director in the statewide Draft Environmental Impact Statement (EIS), and the Secretary of the Interior. During this portion of the wilderness study process, the Area Managers are asking for comments on their recommendations and alternatives. They are particularly interested in specific information about individual WSAs.

During this review you are encouraged to contact the Area Managers for additional information. Please submit your comments by May 31, 1983 to the appropriate Area Manager.

Herrick Hanks
Rio Puerco Resource Area
P.O. Box 6770
Albuquerque, NM 87107

Richard Niemeyer
Taos Resource Area
P.O. Box 1045
Taos, NM 87571

Based on the public comments, the recommendations made by the Area Managers will be re-evaluated and are subject to my concurrence in the Final EA.

Sincerely yours,

L. Paul Applegate

L. Paul Applegate
District Manager

United States Department of the Interior



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Washington, D. C. 20246

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Enclosed is a copy of the report titled "Inventory of the National System of Public Lands" which was prepared by the Bureau of Land Management, Department of the Interior, and the General Land Office, Department of the Interior, for the purpose of providing a comprehensive inventory of the National System of Public Lands.

The report was prepared by the Bureau of Land Management, Department of the Interior, and the General Land Office, Department of the Interior, for the purpose of providing a comprehensive inventory of the National System of Public Lands.

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DRAFT
ALBUQUERQUE DISTRICT
WILDERNESS ENVIRONMENTAL ASSESSMENT

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CHAPTER 1

PURPOSE AND NEED

NEED FOR THE ACTION

The Federal Land Policy and Management Act of 1976 (FLPMA) mandated the Bureau of Land Management (BLM) to examine the wilderness potential of certain areas of public land. The wilderness review provision of FLPMA, Section 603, directs the BLM to conduct an inventory to identify all roadless areas of 5,000 acres or more that have wilderness characteristics. These areas are called Wilderness Study Areas (WSAs). WSAs have been identified by the BLM and studied to determine whether each is suitable for preservation as wilderness or is more suitable for other uses. The findings of these studies will lead to recommendations, through the Secretary of the Interior and the President, to Congress. Only Congress has the authority to designate public land as wilderness.

THE BLM NEW MEXICO WILDERNESS STUDY PLANNING PROCESS

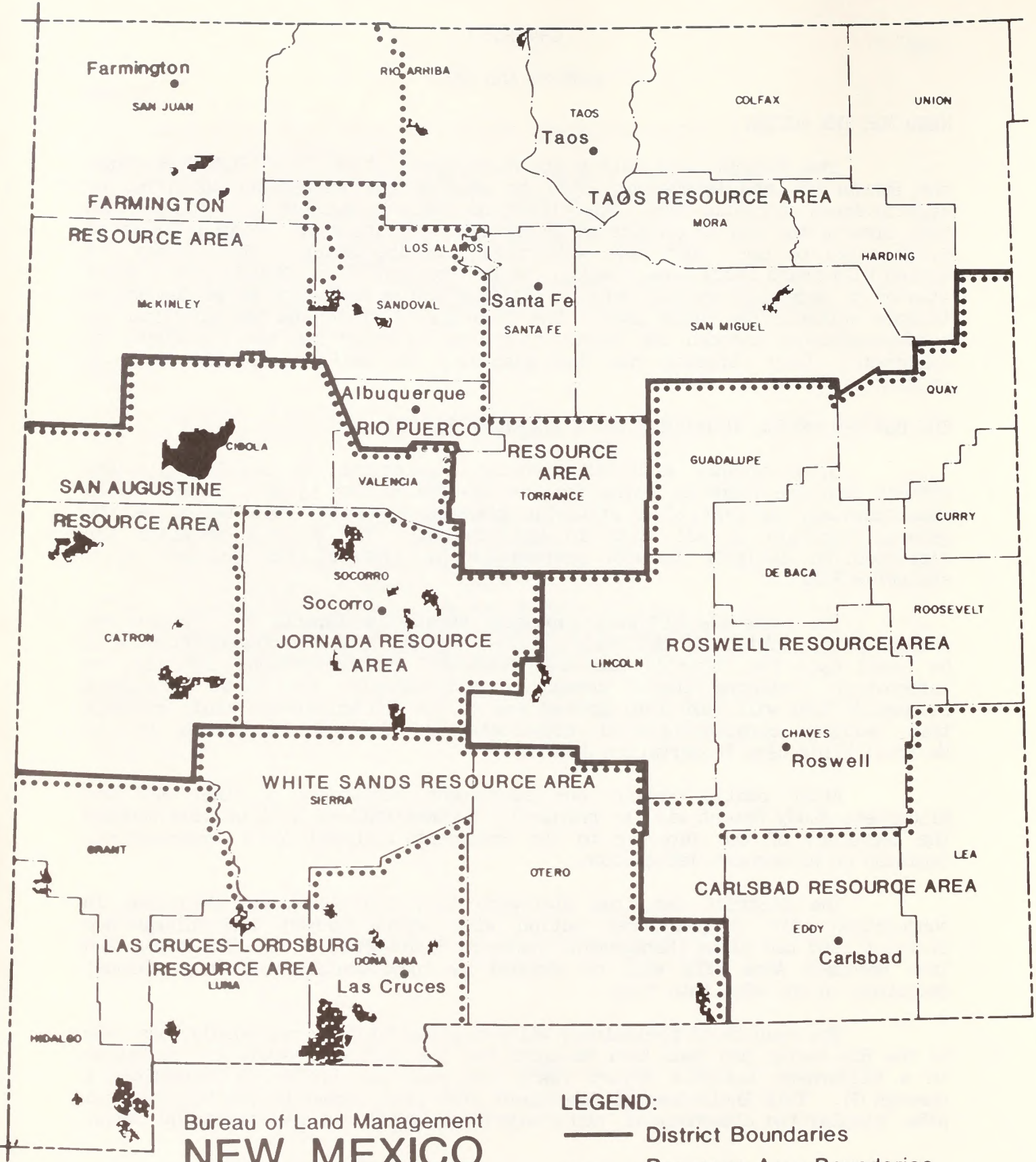
In accordance with BLM planning regulations, an amendment to the present land use plans is being made in New Mexico for 33 WSAs being studied simultaneously as part of a statewide planning process. Map 1-1 shows the general location of all WSAs in New Mexico. The process provides for site-specific analysis through preparation of district EAs followed by a statewide EIS.

The statewide EIS will summarize cumulative impacts and include the recommendation of the BLM New Mexico State Director. These recommendations will be based upon the District and Area Managers' recommendations and any new information including public comment. Additionally, the State Director's recommendations will take into account one of the BLM wilderness study criteria that requires consideration of representation of basic ecosystems in the National Wilderness Preservation System.

After public comment and subsequent revisions, a Final EIS and Wilderness Study Report will be prepared. Recommendations will be made through the Secretary of the Interior to the President followed by a Congressional decision on wilderness designation.

The district EAs, the statewide EIS, and subsequent decisions in conjunction with Congressional action will amend current BLM Albuquerque District land use plans (Management Framework Plans--MFPs). The Rio Puerco and Taos Resource Area MFPs will be amended by incorporating the Congressional decisions on the WSAs into them.

The results of preliminary wilderness suitability recommendations made by the Rio Puerco and Taos Area Managers for the statewide study are contained in a Wilderness Analysis Report (WAR) for each WSA (refer to Appendices A through G). This Environmental Assessment (EA) is designed to tie together the WARs, display the alternatives, and analyze the impacts on a districtwide basis.



Bureau of Land Management
**NEW MEXICO
 WILDERNESS
 STUDY AREAS 1982**

WILDERNESS STUDY AREAS IN THE ALBUQUERQUE DISTRICT

The Albuquerque District is divided into three Resource Areas, the Rio Puerco Resource Area, the Taos Resource Area and the Farmington Resource Area. Map 1-2 shows the general location of these Resource Areas.

Eleven WSAs exist in the Albuquerque District as a result of the wilderness inventory process and subsequent policy decisions. They are listed on Table 1-1 and shown on Map 1-2.

The Bisti, De-na-zin, and Ah-shi-sle-pah WSAs are located in the Farmington Resource Area. These WSAs are being studied in a separate Environmental Impact Statement. The remaining 8 WSAs are studied in the statewide study process of which this EA is a part.

On December 30, 1982 the Secretary of the Interior published in the Federal Register (Vol. 47, No. 251) a notice amending previous wilderness inventory decisions in accordance with three Interior Board of Land Appeals (IBLA) decisions. These decisions involved areas smaller than 5,000 acres, lands where the federal government owns the surface but where the subsurface mineral estate is nonfederally owned (referred to as split-estate lands), and areas contiguous to designated wilderness.

In New Mexico, this policy announcement resulted in the elimination of 12 WSAs from the statewide study. In the Albuquerque District, the Manzano WSA was eliminated because it was smaller than 5,000 acres. The Chamisa WSA was eliminated because it was smaller than 5,000 acres after deletion of split-estate lands.

This policy announcement also resulted in boundary changes for 11 other WSAs in New Mexico. These WSAs were modified but still remain in the statewide study. In the Albuquerque District a major boundary adjustment, reinventory and restudy was found to be necessary for the Ignacio Chavez WSA because it contained a substantial amount of split-estate lands. This WSA will be addressed in a supplemental Environmental Assessment to be released after the restudy is completed.

TABLE 1-1

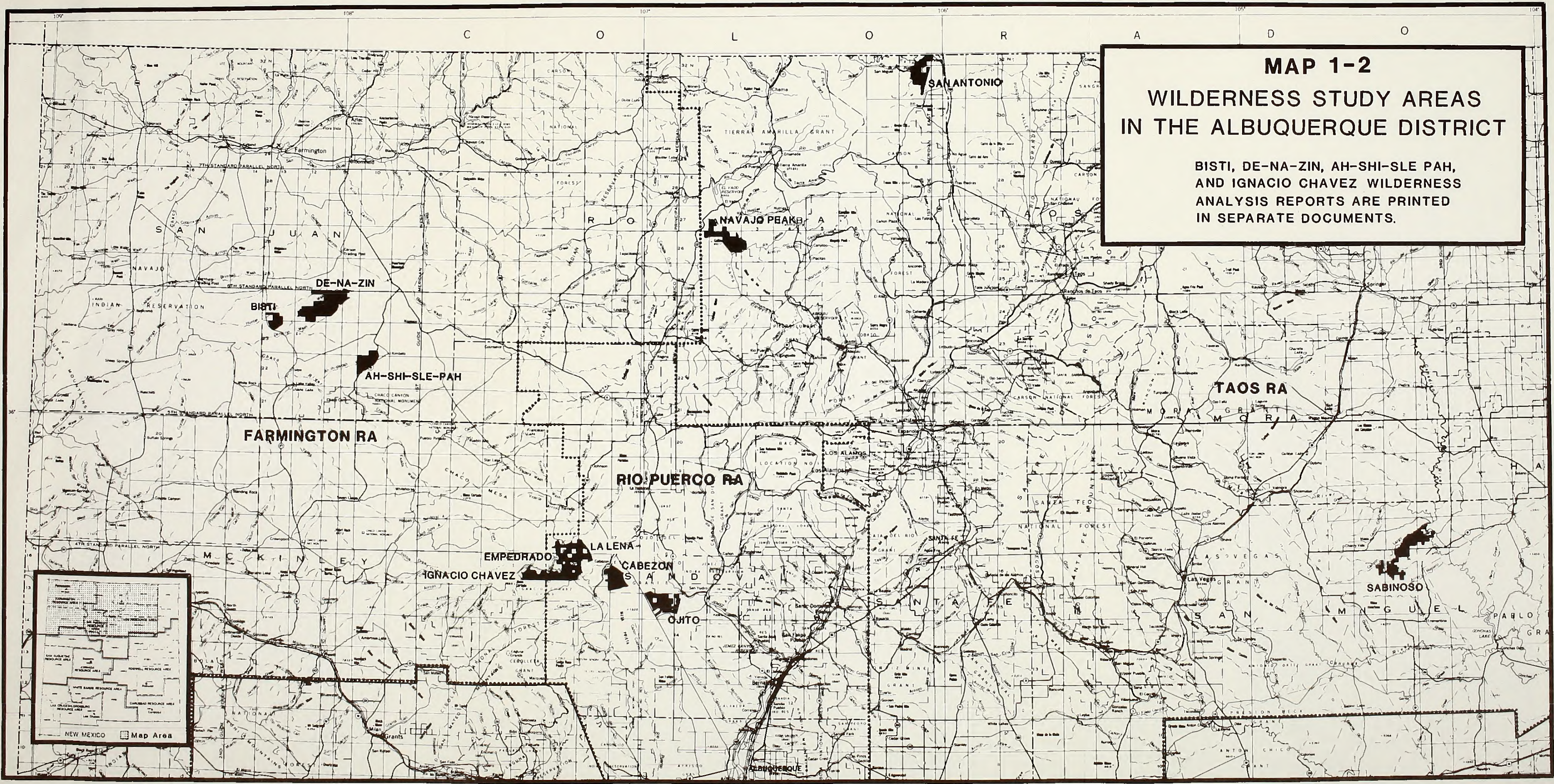
WILDERNESS STUDY AREAS IN THE BLM ALBUQUERQUE DISTRICT

WSA Name	WSA Number	Acres ^{a/}
<u>Farmington Resource Area^{b/}</u>		
Ah-shi-sle-pah	NM-010-009	6,563
Bisti	NM-010-057	3,968
De-na-zin	NM-010-004	19,922
<u>Rio Puerco Resource Area</u>		
Cabazon	NM-010-022	8,038
Empedrado	NM-010-063	9,410
Ignacio Chavez ^{c/}	NM-010-020	9,961
La Lena	NM-010-063A	10,310
Ojito	NM-010-024	11,919
<u>Taos Resource Area</u>		
Navajo Peak	NM-010-059	11,985
Sabinoso	NM-010-055	15,760
San Antonio	NM-010-035	7,050

Notes: ^{a/} Acreages are approximate and reflect corrections made during the wilderness study.

^{b/} These WSAs are not included in the statewide study. An environmental impact statement has been written on these WSAs because they are on an accelerated schedule.

^{c/} This WSA will be analyzed in a supplemental environmental assessment.



MAP 1-2
WILDERNESS STUDY AREAS
IN THE ALBUQUERQUE DISTRICT

BISTI, DE-NA-ZIN, AH-SHI-SLE PAH,
AND IGNACIO CHAVEZ WILDERNESS
ANALYSIS REPORTS ARE PRINTED
IN SEPARATE DOCUMENTS.

CHAPTER 2

ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

INTRODUCTION

During the initial stages of writing this EA, four alternatives were established as possible ways of managing the WSAs. The impacts of each alternative were then analyzed in this EA for each WSA as appropriate. Subsequent to this analysis, one of the four alternatives was selected by the Area Managers as the "Preferred Alternative" for managing each WSA. The management alternatives and the preferred alternative are defined below and shown in Table 2-1. A more detailed analysis of the environmental impacts of the proposed alternatives can be found in the Wilderness Analysis Reports (Appendices A through G of this EA). The four alternatives being considered include the following.

ALL WILDERNESS ALTERNATIVE

This alternative considers recommending an entire WSA as suitable for wilderness.

AMENDED BOUNDARY ALTERNATIVE

This alternative consists of recommending a portion of a WSA as suitable for wilderness designation when warranted by resource conflicts, manageability considerations, and other relevant factors.

NO WILDERNESS/AMEND THE EXISTING PLAN ALTERNATIVE

This alternative consists of recommending a WSA as unsuitable for wilderness designation. It also recognizes that the existing plan or management strategy does not adequately reflect current needs. Amending the existing plan or management strategy when no plan exists could result in a special designation or improved management to reflect current needs.

NO ACTION (NO WILDERNESS/MANAGE UNDER EXISTING PLAN) ALTERNATIVE

This alternative consists of no wilderness designation, and management in accordance with the existing plan or management strategy.

PREFERRED ALTERNATIVE

The preferred alternative is indicated in Table 2-1. This alternative represents the recommendation of the Rio Puerco Area Manager and the Taos Area Manager for each WSA.

TABLE 2-1

SUMMARY OF ALTERNATIVES

WSA/Acres	Preferred Alternative	All Wilderness	Amended Boundary (Partial Wilderness)	No Wilderness (Amend the Existing Plan)	No Action (No Wilderness/ Manage Under Existing Plan)
<u>Rio Puerco Resource Area</u>					
Cabezon NM-010-022 8,038 acres	Recommend 6,475 acres of public land suitable for wilderness designation. Recommend the remaining 1,563 acres nonsuitable for wilderness designation.	Recommend 8,038 acres of public land suitable for wilderness designation.	See Preferred Alternative column for summary.	For this WSA, this alternative was not assessed.	Recommend 8,038 acres of public land as nonsuitable for wilderness designation and to be managed as undesignated multiple use lands.
Empedrado NM-010-063 9,410 acres	Manage 3,443 acres under protective status through amending the existing plan. Recommend the remaining 5,967 acres of public land to be managed under no special designation.	Recommend 9,410 acres of public land as suitable for wilderness designation.	For this WSA, this alternative was not assessed.	See Preferred Alternative column for summary.	Recommend the entire 9,410 acres of public land as nonsuitable for wilderness designation.
La Llena NM-010-063A 10,310 acres	Recommend 3,200 acres of the San Luis Mesa raptor area to be managed under special designation. Recommend 7,110 acres to be managed as undesignated multiple use lands.	Recommend 10,310 acres of public land as suitable for wilderness designation.	For this WSA, this alternative was not assessed.	See Preferred Alternative column for summary.	Recommend the entire 10,310 acres of public land as nonsuitable for wilderness designation and to be managed as undesignated multiple use lands.
Ojito NM-010-024 11,919 acres	Recommend 11,297 acres of public land suitable for wilderness designation. Recommend the remaining 622 acres of public land nonsuitable for wilderness designation.	Recommend 11,919 acres of public land suitable for wilderness designation.	See Preferred Alternative column for summary.	For this WSA, this alternative was not assessed.	Recommend 11,919 acres of public land nonsuitable for wilderness designation and to be managed as undesignated multiple use lands.

TABLE 2-1 (Concluded)

WSA/Acres	Preferred Alternative	All Wilderness	Amended Boundary (Partial Wilderness)	No Wilderness (Amend the Existing Plan)	No Action (No Wilderness/ Manage Under Existing Plan)
<u>Taos Resource Area</u>					
Navajo Peak NM-010-059 11,985 acres	Recommend 4,032 acres of public land as suitable for wilderness designation. Manage the remaining 7,953 acres for the uses and activities indicated in the pertinent BLM planning documents for the area.	Recommend 11,985 acres of public land suitable for wilderness designation.	See Preferred Alternative column for summary.	Recommend 4,032 acres of public land be managed under special designation to protect the natural values of the Chama River Canyon. The remaining public land acreage to be managed as undesignated multiple use lands.	Recommend 11,985 acres of public land as unsuitable for wilderness designation.
Sabinoso NM-010-055 15,760 acres	Recommend 15,760 acres of public land suitable for wilderness designation.	See Preferred Alternative column for summary.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	Recommend 15,760 acres of public land unsuitable for wilderness designation.
San Antonio NM-010-035 7,050 acres	Recommend 7,050 acres of public land as unsuitable for wilderness designation.	Recommend 7,050 acres of public land as suitable for wilderness designation.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	See Preferred Alternative column for summary.

AFFECTED ENVIRONMENT

OVERVIEW OF THE ALBUQUERQUE DISTRICT

The Albuquerque District includes approximately 2.6 million acres of scattered public land in the northern half of New Mexico. The two Resource Areas in which the 7 WSAs involved in the statewide study are located account for 1,070,300 acres of the public lands in the district. The programs carried out in these Resource Areas include range and forest management, mineral leasing, recreation, cultural resources, lands, paleontology, soils, visual, watershed and wildlife habitat management.

SOCIAL AND ECONOMIC CONDITIONS

Introduction

This analysis focuses on three counties: Rio Arriba, Sandoval, and San Miguel. The seven WSAs being covered in the statewide study are located in these counties. The common factor all these counties have is that Albuquerque (located in Bernalillo County) serves as their primary trade and service center. The adjoining counties of Rio Arriba and Sandoval contain six of the WSAs. Each of these counties is served by one or more secondary trade and service centers. San Miguel County, containing one WSA, also has a trade and service center but because of the distance from the other counties, it does not form a cohesive social or economic unit with them.

Population

Population characteristics vary by county, but the affected WSA counties all show growth over the decade 1970 to 1980. All of the affected counties had annual growth rates of less than 5 percent, except Sandoval County, where the rate was nearly 10 percent.

The Standard Metropolitan Statistical Areas (SMSAs--refer to the Glossary) within an 8-hour drive (400 miles) of the WSAs had a combined 1980 population of 3.5 million people.

Population densities by square mile for the WSA counties are: Rio Arriba--5.0 (29,282 persons in 5,883 square miles); Sandoval--9.4 (34,799 persons in 3,717 square miles); and San Miguel--4.8 (22,751 persons in 4,767 square miles).

Local Attitudes and Perceptions

Approximately 58 percent of the 1980 population was classified as rural. Most of these people exhibit attitudes and values typical of rural western United States societies. They value the lifestyle offered by the local communities. Much of the support for wilderness and its values comes from outside the WSA counties by people who are less directly affected.

Economic Characteristics

Wage and salary income figures by major source for 1980 show government (38 percent), retail trade (11 percent), services (16 percent), and construction (8 percent) in the affected counties.

Income

Per capita income for each of the three counties was below the state average in 1980. When ranked with all the state's 32 counties, they ranked Rio Arriba 27th, Sandoval 31st, and San Miguel 30th in per capita income.

Employment

The total employment for the three WSA counties was 29,886 persons in 1980. The major employment sectors were government, retail trade, and services. Government employment accounted for 6,449 jobs equal to approximately 19 percent of the 1980 three-county civilian labor force. Government employment by county was Rio Arriba 2,348, Sandoval 1,085, and San Miguel 3,016.

The 1980 unemployment rate for each of the three counties was higher than the state's rate of 7.4 percent. Rio Arriba had the highest unemployment rate of 17.7 percent. The other counties were San Miguel 10.6 percent, and Sandoval 7.7 percent.

By September of 1982, general economic conditions had resulted in considerable change in the unemployment rates. The state's rate had become 9.9 percent. The counties were Rio Arriba 18.4 percent, San Miguel 12.0 percent, and Sandoval 8.4 percent. (This is actually the Albuquerque SMSA rate; Sandoval County is part of the SMSA).

WILDERNESS STUDY AREAS

Tables 3-1 and 3-2 summarize the affected environment, and Tables 3-3 and 3-4 summarize the existing and potential uses of each of the WSAs by Resource Area.

TABLE 3-1
SUMMARY OF AFFECTED ENVIRONMENT, RIO PUERCO RESOURCE AREA WSAs

WSA	Acreage	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened and Endangered Species	Visual	Cultural	Wilderness Values	Other
Cabezon Entire WSA	8,038	All public land.	Three principal land forms: (1) eroded volcanic neck of Cabezon; (2) talus covered slopes (3) incised mesa topography. Cabezon Peak is the most spectacular example of volcanic necks in the region, rising to an elevation of 7,785 feet.	Cabezon Peak is the highest and most impressive volcanic neck in the region. The basalt core is about 1,500 feet in diameter. Similar in form to Devils Tower, Wyoming. Is considered an outstanding volcanic neck in the Four Corners Region. Excellent opportunity to study "internal plumbing" of a volcano.	Surface waters include 5 small reservoirs. No ground water developments occur. Quality ranges from fresh to moderately saline. Dominant use is by beef cattle and wildlife. Critical levels of soil loss in the southern 1/3 of the unit.	Orama-Galleta Steppe, 30% of WSA. Juniper-Pinyon Woodland, 70% of WSA.	90 vertebrate species including: mule deer, antelope (low populations), coyote, bobcat, gray fox, badgers; common small mammals; red-tail hawks; good variety of small birds; abundant scaled quail and morning dove; 6 species of waterfowl; several reptiles including diamond-backed rattlesnake.	<u>Maxmillaria Wrightii</u> -pincushion cactus; <u>Pediocactus papyracanthus</u> -blue grama cactus.	Scenic quality rating of A. Cabezon Peak is an important historic and contemporary landmark.	One National Register site on Cabezon Peak; currently functions as shrine for Native Americans. Cabezon Peak served as part of prehistoric Chacoan signaling system. Numerous prehistoric and historic sites.	High degree of perceived naturalness. Unique topography provides opportunity for solitude or primitive recreation. Special Features: refer to T&E Cultural, Visual, Wildlife and Geology.	Paleontology: sedimentary rocks contain large fossil assemblage-little is known of their extent. Air Quality-readings from monitoring data indicate within Class II standards.
Portion Recommended Suitable	6,475	All public land.	Same as above.	Same as above.	Water, same as above excluding reservoirs. Soils, most critical portion suffering from soil loss removed.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.
Portion Recommended Nonsuitable	1,563	All public.	Incised mesa topography.	Mesa, cut by arroyos.	Water, same as above excluding reservoirs. Soils, area of most critical soil loss.	Orama-Galleta Steppe-100%.	Same as above.	None presently known.	Low Scenic Value.	Few sites presently known.	Primarily rolling foothills; limited opportunities for primitive recreation; good solitude opportunity.	Same as above.
Empedrado Entire WSA	9,410	9,410 acres of public lands. 360 acres private land inholdings.	Overall geomorphology consists of sandstone hills cut by arroyos. Elevation ranges from 6,000 feet to 6,552 feet.	Is situated on the southwest margin of the San Juan Basin near the boundary between the Chaco slope and the Central Basin. Consists of gently dipping sandstone beds of the Menefee Formation which forms cuesta and valley landscape.	Water, average annual water yields fall between 0.1" and 0.5". Since 1979, a mine dewatering process has been discharging into Arroyo Chico at a rate of about 5 to 6 cubic feet/second, creating a perennial stream. Contains 2 known springs and 3 water wells. Soils, susceptible to erosion; contains heavy textural soils with sodium and alkali content.	Contains riparian habitat in the Arroyo Chico. Orama-Galleta Steppe-14% of WSA. Juniper-Pinyon Woodland-76% of WSA.	268 vertebrate species, including: 10 amphibian, 132 birds, 87 mammals, 39 reptiles. This includes mule deer, gray fox, golden eagles, hawks, great horned owl, coyote, badgers, prairie dogs, scaled quail.	None known.	Northern portion rated scenic Class C. Southern portion rated scenic Class A.	Limited survey identified 24 sites, including Archaic, Navajo and historic.	High degree of perceived naturalness. Opportunities for solitude concentrated in the southern portion. Limited opportunity for primitive recreation.	Paleontology-Sedimentary rocks that crop out in the WSA known regionally to contain a varied fossil assemblage. Little is known of their extent.
Portion Recommended Suitable	0	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.
Portion Recommended Nonsuitable	9,410	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.

1. The first section of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The text also mentions the need for regular audits and the role of internal controls in ensuring the reliability of the data.

2. The second section of the document focuses on the role of the accounting department in the overall business operations. It describes how the accounting team provides critical information to management, enabling them to make informed decisions about the company's future. The text also highlights the importance of communication between the accounting department and other business units.

3. The third section of the document discusses the challenges faced by the accounting department in the current business environment. It mentions the increasing complexity of financial transactions and the need for advanced technology to manage the data effectively. The text also addresses the importance of staying up-to-date with the latest accounting standards and regulations.

4. The fourth section of the document provides a summary of the key points discussed in the previous sections. It reiterates the importance of accurate record-keeping, the role of the accounting department, and the challenges faced by the industry. The text concludes by emphasizing the need for continuous improvement and innovation in the accounting profession.

TABLE 3-1 (concluded)

WSA	Acreage	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened and Endangered Species	Visual	Cultural	Wilderness Values	Other
La Lena Entire WSA	10,310	10,310 acres of public land. 640 acres of state inholdings.	Overall geomorphology consists of sandstone mesas cut by arroyos. Elevations range from 6,100 feet to 6,500 feet.	Is situated on the southwest margin of the San Juan Basin near the boundary between the Chaco Slope and the Central Basin. Subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and spectacular escarpments.	Water, peak runoffs occur during the summer and early autumn months. Contains one known undeveloped spring.	Grama-Galleta-34% of WSA. Juniper-Pinyon Woodland-58% of WSA. Great Basin Sagebrush -8% of WSA.	Contains San Luis Mesa; ideal raptor nesting habitat. Observed: golden eagle, great horned owl, a few mule deer, coyote, gray fox, black-tailed jackrabbit, Garrison's prairie dog, scaled quail.	Potential habitat for <u>Abronia bigelovii</u> -bigelov verberna; <u>Pediocactus papyracanthus</u> -blue grama cactus; <u>Astragalus kentrophyta</u> var. <u>neomexicana</u> -N.M. <u>kentrophyta</u> .	Southern half-VRM Class III. Northern half-VRM Class IV.	Limited survey-reveals five known sites; 3 Navajo and 2 lithic scatters of undeterminable cultural affiliation. A minimum of 150 sites is projected.	High degree of perceived naturalness. Limited opportunity to experience solitude or primitive recreation. Special Features: refer to wildlife and cultural.	Paleontology, sedimentary rocks that crop out in WSA known regionally to contain a varied fossil assemblage. Little is known of their extent.
Portion Recommended Suitable	0	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.	Entire WSA recommended nonsuitable.
Portion Recommended Nonsuitable	10,310	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.
Ojito Entire WSA	11,919	11,919 acres of public land. 640 acres of state land inholdings. 160 acres of private land inholdings.	Located in the Navajo section of the Colorado Plateau province. Land forms include mesas, cuevas, rock terraces, retreating escarpments, canyons, arroyos, badlands. Elevation varies from 5,650 feet to 6,211 feet.	Is situated on the southeast margin of San Juan Basin. Subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and several spectacular escarpments.	Water, peak runoff occurs from July through September (99% of annual discharge.) Average annual water yields fall between 0.1" and 0.5". Contains one known undeveloped water well and several springs. Soils, moderately to strongly alkaline and highly susceptible to erosion.	Grama-Galleta Steppe-48% of WSA. Juniper-Pinyon Woodland-52% of WSA.	268 vertebrate species including amphibians, birds, mammals, reptiles. These include antelope, mule deer, coyote, fox, weasel, as well as excellent nesting habitat for raptors and nesting areas for migrating waterfowl.	High potential for rare plant occurrence: <u>Abronia bigelovii</u> -Bigelov verberna; <u>Selinocarpus lanceolatus</u> -Moopod; <u>Erigeron pulcherrimus</u> var. <u>pulcherrimus</u> -fleabane; <u>Pediocactus papyracanthus</u> -blue grama cactus; <u>Muhlenbergia purgens</u> -sandhill muhly.	High visual values.	Surveys suggest over 500 sites are located in WSA with a density of over 21 sites per section. Reported sites include 12 Archaic, 11 prehistoric pueblo Navajo, 7 historic.	High degree of perceived naturalness. Numerous side canyons, sandy arroyos and rough rocky terrain provide outstanding opportunity to experience solitude and primitive recreation. Special Features: refer to T&E, visual and cultural.	Paleontology, four sedimentary rock units exposed are regionally fossiliferous. One site consisting of dinosaur vertebrae and ribs known. Significance not yet determined.
Portion Recommended Suitable	11,297	11,297 acres of public land. 640 acres of state land inholdings.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.
Portion Recommended Nonsuitable	622	622 acres of public land.	Rolling topography cut by Querencia Arroyo.	Same as above.	Same as above.	Grama-Galleta-100%.	Same as above, excluding raptor habitat, waterfowl and antelope.	Same as above.	Marginal visual values.	No known sites.	Marginal Wilderness Values.	No known Paleontology sites.

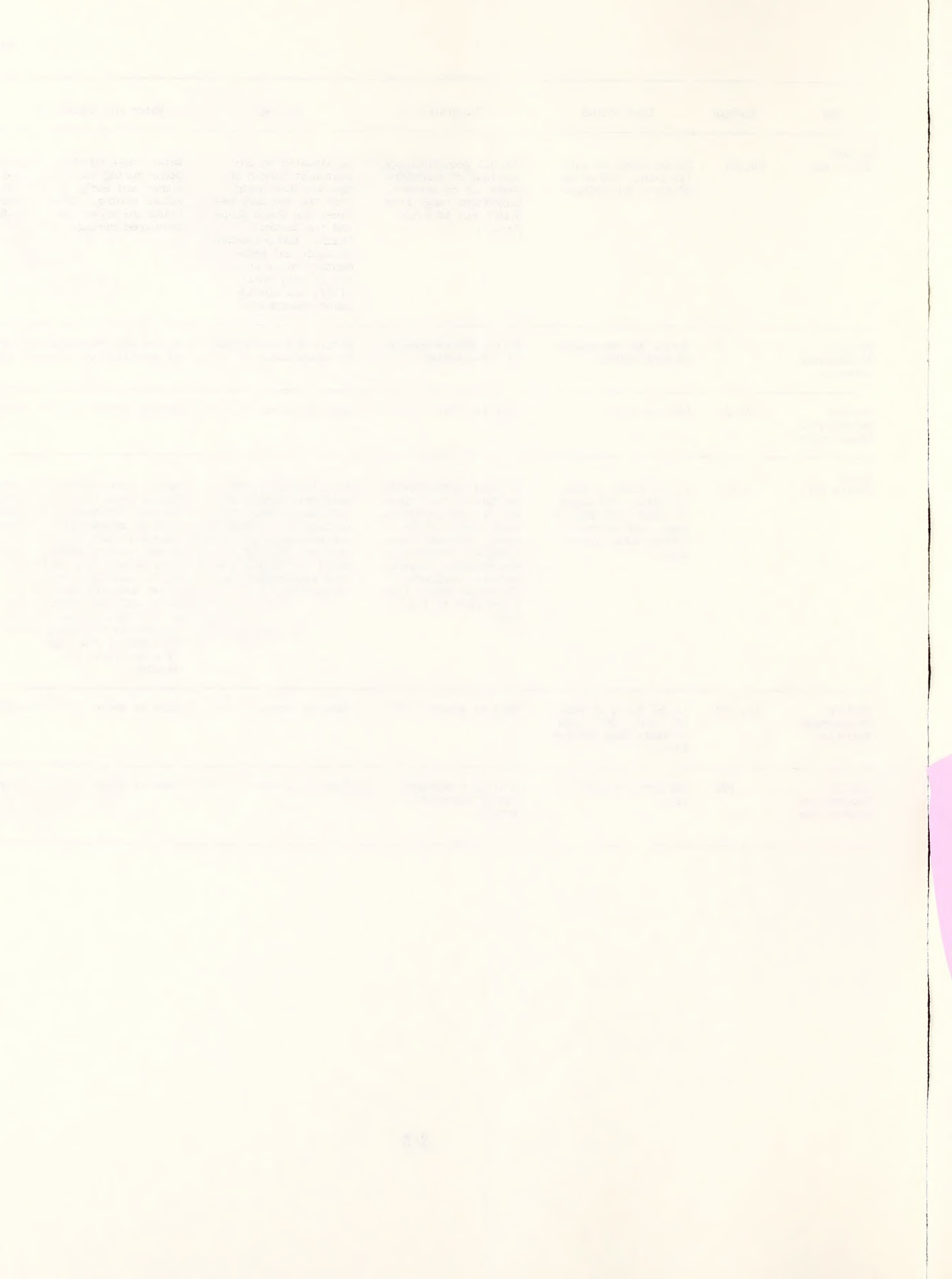


TABLE 3-2
SUMMARY OF AFFECTED ENVIRONMENT, TAOS RESOURCE AREA WSAs

WSA	Acreage	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened and Endangered Species	Visual	Cultural	Wilderness Values	Other
Navajo Peak Entire WSA	11,985	11,985 acres of public land 320 acres of private inholdings	The WSA contains rolling plains bisected by the Rio Chama Canyon gorge with elevations ranging from 6,600 to 7,500 feet.	Located in the Oallina Fault. Erosion by the Rio Chama has created a 900 foot canyon exposing the colorful Morrison Formation (Jurassic) in the canyon walls.	The WSA lies within the Rio Chama drainage. Flow of the Rio Chama through the WSA has seasonal variations. Soil types in the study area are grouped into two associations: Las Lucas-Little-Persayo and Rock Land-Rough Broken Land.	4,700 acres of midland grasslands, 5,000 acres of midland shrubs, 1,000 acres of P.J. woodlands, 800 acres of conifer forests and 485 acres of riparian vegetation. Sagebrush clearing has been done between 1950 and 1970 on approximately 5,000 of these acres.	The area supports some mule deer, elk and mountain lion. Excellent fisheries habitat are found in the area for rainbow trout. Ducks, geese and some raptor species can be found along the river.	Threatened and endangered animals confirmed to frequent the area are Bald eagle, peregrine falcon and osprey. No threatened or endangered plants are presently recognized as being indigenous to this locality or known to occur within the study area.	Two VRM classes have been identified in the study area. The rolling uplands beyond the rim of the canyon are Class III. The Chama River Canyon is rated a higher Class II. The entire WSA is being managed during the interim as VRM Class II.	The WSA is expected to contain remains of PaleoIndian, Archaic, Prehistoric Pueblo, and Historic Homesteading sites.	Naturalness, solitude and primitive recreation opportunities are all experienced below the canyon rims within the Rio Chama gorge. The chances for solitude and primitive recreation are somewhat diminished above the rim due to the influence of human uses.	
Portion Recommended Suitable	4,032	4,032 acres of public land. No private inholdings.	The portion recommended suitable consists of the Rio Chama Canyon gorge which is approximately 900 feet deep with steep rocky sides, and the river bottom.	This portion is overlain by the same formations as the entire WSA. One of those formations, the Morrison, is visible within the canyon walls.	The Rock Land-Rough Broken Land association is along the Chama River and below the rim. It is characterized by rough and broken topography, very steep slopes and rock outcrops.	The most obvious plant species associated with the canyon are cottonwoods, willows, ponderosa pine and various deciduous shrubs.	Same as entire WSA.	Same as entire WSA.	The visual environment below the rim and along the Chama River offer a greater degree of landform and vegetative features than those areas above the rim. It has been rated VRM Class II.	Same as entire WSA.	The perceived naturalness, the feeling of solitude and the opportunities for primitive recreation are more apparent.	
Portion Recommended Nonsuitable	7,953	7,953 acres of public land. 320 acres of private inholdings.	Topography consists primarily of gently to strongly sloping and rolling uplands.	This portion consists of the same geologic structure as the entire WSA, however it does not contain the canyon with the exposed Morrison Formation.	Consists primarily of the Las Lucas-Little-Persayo association. Slopes are predominantly less than 20 percent. They support fair to good stands of vegetation.	This portion contains primarily pinyon-juniper woodlands, and Great Basin sagebrush. Along the canyon rim ponderosa pine predominates. The area where sagebrush clearing has taken place lies in this portion.	This portion above the rim supports mule deer, elk, black bear, coyote and turkey.	Same as entire WSA.	The visual quality above the canyon is of lower quality due to the lack of variety in landform relief and vegetation. It has been rated a VRM Class III.	Same as entire WSA.	Naturalness and the opportunities for solitude are marginal due to the influences of man in this portion.	
Sabinoso Entire WSA	15,760	15,760 acres of public land. 320 acres of private inholdings.	Topography in this portion consists of steep rugged canyons surrounded by rolling and flat mesa tops. Elevation ranges from 4,500 to 6,000 feet.	Located in the Canadian Escarpment with a mantle of flat-lying Mesozoic sediments up to 2,000 feet thick, underlain by 500 feet of upper Paleozoic sediments and rims capped by sandstone.	The WSA lies between the Canyon Largo and Lagartija Creek drainages which flow into the Canadian River. On the flatter mesa and ridge tops areas in the WSA is the Crews-Bernal-Travesilla soil association. Along the canyon walls and in the bottoms is the Rock Land-Rough Broken Land soil association.	6,700 acres of conifer forests and pinyon-juniper woodlands, 7,160 acres of midland grasses and 1,900 acres of barren land.	There are some mule deer and barbary sheep with sightings of imported ibex occurring in the unit. Habitat potential exists for big-game species.	No known occurrence of T&E plant species. Little potential for Black-footed ferret, because habitat conditions to support prairie dog populations are inadequate.	The WSA offers a variety in visual resources from its canyon lands with riparian habitat to open rolling prairie lands. It is presently being managed as VRM Class II during the interim.	It is expected that the area contains a high density of archaeological sites dating from the PaleoIndian period through homesteading and ranching during the early 20th century.	High degree of solitude may be experienced due to the extreme remoteness of the canyons. Opportunities for primitive recreation are outstanding.	
Portion Recommended Suitable	15,760	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	
Portion Recommended Nonsuitable	0	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	Entire WSA recommended as suitable.	

TABLE 3-2 (Concluded)

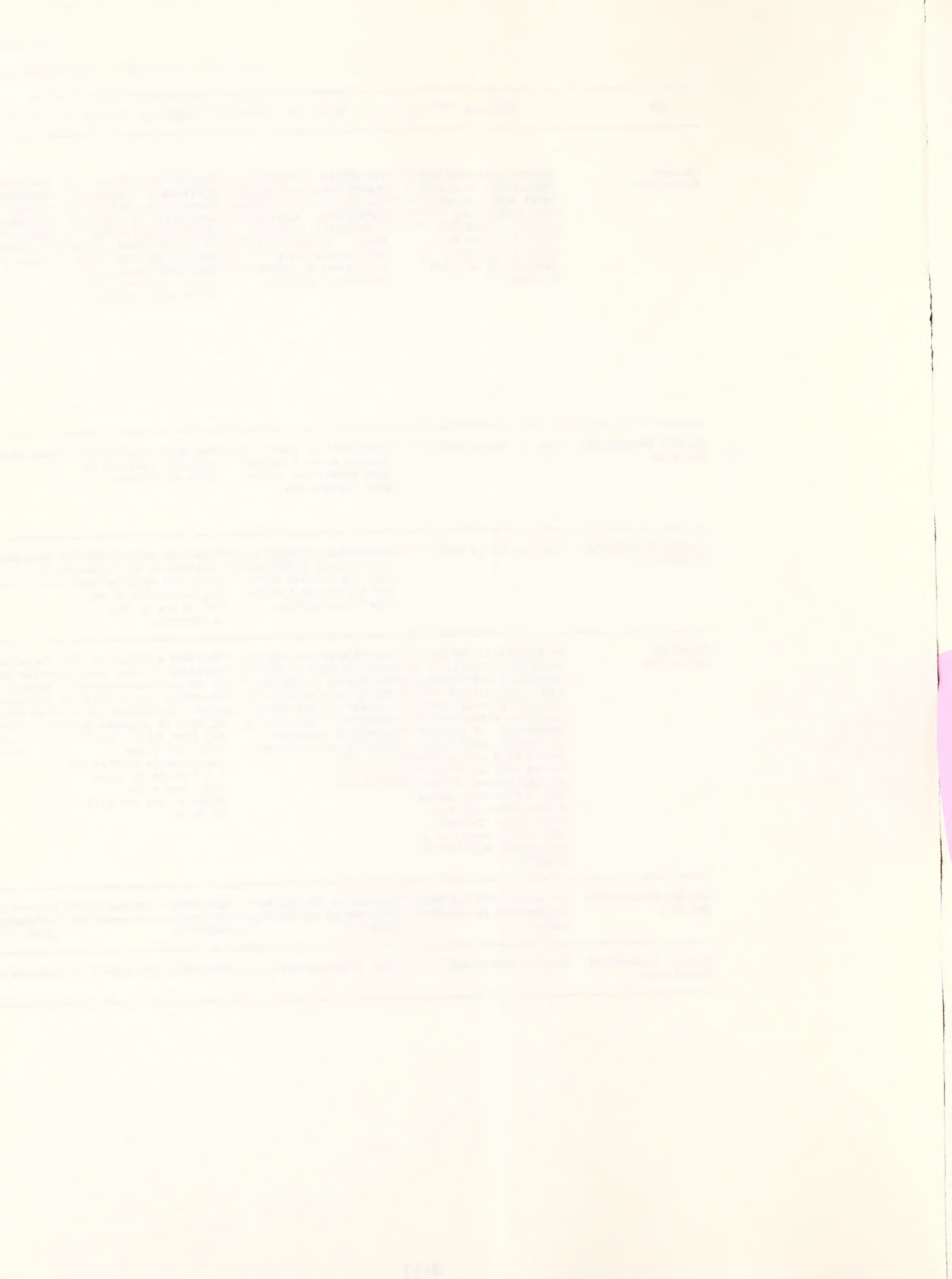
WSA	Acreage	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened and Endangered Species	Visual	Cultural	Wilderness Values	Other
San Antonio Entire WSA	7,050	7,050 acres of public land. 1,280 acres of state owned surface inholdings. No non-BLM subsurface.	Topography of the WSA consists of rolling flat plains bisected north and south by the 200 foot deep Rio San Antonio Canyon. Elevation ranges from 7,900 feet to 8,835 feet.	Located within the Tusas uplift and the Rio Grande trough, the WSA is comprised of tertisry, sedimentary and volcanic rock and alluvial deposits.	The WSA lies within the Rio San Antonio and Rio de Los Pinos drainages. The Rio San Antonio is an ephemeral water source. Three soil associations are found within the WSA. They are: 1) Travelers-Luhm-Sturmer. 2) Raton-Rock Outcrop-Orejas and 3) Eutroboralfs-Haplobololls.	5,000 acres midland shrubs 2,000 acres midland grasslands and 1,000 acres of pinyon-juniper woodlands.	The WSA is utilized by pronghorn antelope herds. Some rector species nest along the canyon walls of the Rio San Antonio.	No T&E plant species are presently recognized as being indigenous to this locality or known to occur in the study area. There is the potential for occurrence of 9 T&E animal species in the area. Sitings of bald eagle, osprey and peregrine falcon have been reported.	The San Antonio WSA contains both VPM Class II and III. The entire WSA is being managed as VPM Class II under the interim due to the non-impairment standard. The overall feeling is one of open expanses contrasted by deep incisions in the flat plains produced by two river canyons.	No known sites other than historic sheep herding camps.	Opportunities for naturalness and solitude have been reduced by the evidence of human uses. Opportunities for for primitive recreation exist but are not considered outstanding.	
Portion Recommended Suitable	0	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	Entire WSA recommended as nonsuitable.	
Portion Recommended Nonsuitable	7,050	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	

Project Name	Location	Project Type	Start Date	End Date	Status
Project A	Location A	Project Type A	Start Date A	End Date A	Status A
Project B	Location B	Project Type B	Start Date B	End Date B	Status B
Project C	Location C	Project Type C	Start Date C	End Date C	Status C
Project D	Location D	Project Type D	Start Date D	End Date D	Status D
Project E	Location E	Project Type E	Start Date E	End Date E	Status E
Project F	Location F	Project Type F	Start Date F	End Date F	Status F
Project G	Location G	Project Type G	Start Date G	End Date G	Status G
Project H	Location H	Project Type H	Start Date H	End Date H	Status H
Project I	Location I	Project Type I	Start Date I	End Date I	Status I
Project J	Location J	Project Type J	Start Date J	End Date J	Status J
Project K	Location K	Project Type K	Start Date K	End Date K	Status K
Project L	Location L	Project Type L	Start Date L	End Date L	Status L
Project M	Location M	Project Type M	Start Date M	End Date M	Status M
Project N	Location N	Project Type N	Start Date N	End Date N	Status N
Project O	Location O	Project Type O	Start Date O	End Date O	Status O
Project P	Location P	Project Type P	Start Date P	End Date P	Status P
Project Q	Location Q	Project Type Q	Start Date Q	End Date Q	Status Q
Project R	Location R	Project Type R	Start Date R	End Date R	Status R
Project S	Location S	Project Type S	Start Date S	End Date S	Status S
Project T	Location T	Project Type T	Start Date T	End Date T	Status T
Project U	Location U	Project Type U	Start Date U	End Date U	Status U
Project V	Location V	Project Type V	Start Date V	End Date V	Status V
Project W	Location W	Project Type W	Start Date W	End Date W	Status W
Project X	Location X	Project Type X	Start Date X	End Date X	Status X
Project Y	Location Y	Project Type Y	Start Date Y	End Date Y	Status Y
Project Z	Location Z	Project Type Z	Start Date Z	End Date Z	Status Z

TABLE 3-3

EXISTING AND POTENTIAL USES, RIO PUERCO RESOURCE AREA WSAs

WSA	Minerals	Watershed	Livestock Grazing	Forest Products	Recreation	Education/Research	Native American Uses	Realty Actions	Wildlife
Cabezon Entire WSA	Highest potential for development is associated with uranium contained in the Morrison Formation. There is a low to moderate potential for development of other minerals.	The WSA is in the Rio Puerco watershed which has severe soil erosion conditions. Water use is primarily by livestock. Erosion control devices are being considered to arrest the severe erosion.	The WSA encompasses portions of 5 allotments. Vegetation monitoring is ongoing. The construction of water pipelines, drinking troughs and fences have been proposed to attain improved livestock distribution.	No wood collection has been set up for the area. Pinyon nut collection occurs on a small scale. Some illegal woodcutting does occur.	Cabezon Peak is a popular climbing spot. Hunting and random ORV use occurs in the WSA but would be eliminated through designation.	Cabezon Peak provides interesting subject matter for geologic study. Prehistoric and historic shrines in the WSA provide a good basis for research and education.	Native Americans have indicated that many places of religious significance exist in and near Cabezon Peak.	A powerline right-of-way constitutes part of the WSA's eastern boundary. The area east of Cabezon has been proposed for other utility rights-of-way.	Mule deer and antelope inhabit the area in small numbers. The Peak is attractive to birds of prey and swallows for perching and nesting. The WSA is within the Ojo del Espirito Santo Grant and the Upper Rio Puerco Habitat Management Plan (HMP). This HMP proposes projects to eliminate limiting factors by constructing waters, perches, exclosure fences, and by maintaining stock ponds.
Portion Recommended Suitable	Same as entire WSA.	Would exclude the portion where a serious need exists for watershed restoration.	This area would only encompass portions of three allotments.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Retracting a portion of the eastern boundary would allow "breathing room" for additional rights-of-way.	Same as entire WSA.
Portion Recommended Nonsuitable	Same as entire WSA.	Implementation of erosion control projects would be allowed without wilderness protection stipulations.	This area encompasses portions of two allotments and would allow implementation of an AMP on one of the allotments.	Same as entire WSA.	Recreation activities relying on vehicular travel could continue.	Cabezon Peak is excluded from this portion.	Same as entire WSA.	Would be available for future rights-of-way actions.	Mule deer and antelope inhabit this area of more gentle terrain.
Empedrado Entire WSA	No exploration or development activity associated with locatable, leasable, or saleable minerals is occurring within the boundaries. A total of 331 mining claims have been staked within the WSA as well as 22 oil and gas leases. Potential for development of a moderate-sized coal mine in the northern half would depend on a successful exploration program.	Contains Arroyo Chico, which is part of the Rio Puerco watershed. The average rate of erosion for the WSA is moderate. Currently no watershed treatment projects are proposed.	This WSA encompasses portions of five grazing allotments. The WSA supports 1,340 AUMs. Implementation of AMPs is proposed for all five allotments. Potential range improvements consist of 1 1/4 miles of pipeline, two water troughs, and one mile of fence.	There is no commercial value in the forest products and little fuelwood value due to low stand density.	No visitor data is available for this area. The primary recreation use is believed to be big game hunting, camping, ORV use, hiking and sightseeing.	Education and interpretive potential exists for the observation and study of natural systems.	Native Americans have used the area for firewood gathering and hunting. Native Americans have indicated that places of religious significance exist in or near the WSA. Location and pattern of use were not identified.	No rights-of-way, withdrawals, easements or permits are pending or anticipated.	The Wildlife Habitat Management Plan for the area proposes the construction of several exclosure fences with wildlife watering devices. This will help provide small plots with water, cover, and forage for small animals.
Portion Recommended Suitable	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.	The entire WSA has been recommended as nonsuitable.
Portion Recommended Nonsuitable	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.



WSA	Minerals	Watershed	Livestock Grazing	Forest Products	Recreation	Education/Research	Native American Uses	Realty Actions	Wildlife
La Lena Entire WSA	No exploration or development activity associated with locatable, leasable or saleable minerals is occurring within the WSA. The highest potential for development is associated with coal and humates in the northern half of the WSA. All other commodities have only low to moderate potential for development.	Use of the WSA which is located in the Rio Puerco watershed has resulted in extensive sheet, rill and gully erosion. Studies being conducted in the area may result in future management efforts.	Five grazing allotments contain acreage within the boundaries of this WSA. The WSA supports approximately 1,410 AUMs. Implementation of Allotment Management Plans has been proposed for all five allotments. All the needed range improvements are either in place or being constructed.	There is no commercial value in the forest products and little fuelwood value due to low stand density of pinyon-juniper.	No visitor data is available for this area. The primary recreation use believed to be occurring in this area is hunting, camping, ORV, hiking, rockhounding, horseback riding, photography and sightseeing.	Interpretive potential exists in the WSA in the form of a "living laboratory" for the observation and study of natural systems.	Native Americans have traditionally used the area for firewood gathering and hunting. Certain Native Americans have conceded that places of religious significance exist in or near the WSA. Traditional uses will probably continue.	No rights-of-way, withdrawals, easements or permits are pending or anticipated in the near future in the WSA.	The WSA provides forage, covering and nesting areas for wildlife. One wildlife water device with a protective enclosure fence is present in the WSA. Adequate nesting habitat in the WSA exists to support greater numbers and kinds of raptors.
Portion Recommended Suitable	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.	The entire WSA has been recommended as nonsuitable for wilderness designation.
Portion Recommended Nonsuitable	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.
Ojito Entire WSA	No exploration or development activity associated with locatable, leasable or saleable minerals is occurring within the WSA. Fourteen oil and gas leases have been issued, no producing wells have been completed and the level of exploration activity has been low. All other known commodities in the WSA have only a low potential for development.	Past use has resulted in extensive sheet, rill and gully erosion in the WSA. No potential watershed treatment projects have been proposed.	Portions of four grazing allotments are located in this WSA. The area within this WSA supports approximately 1,207 AUMs. Implementation of Allotment Management Plans has been proposed for all four grazing allotments. Range improvements planned for these allotments include approximately 7 miles of water pipeline and 9 drinking troughs. These improvements would provide for an additional 26 AUMs.	Pinyon and juniper, the two major tree species growing in the WSA are not commercially usable because of their low stand density.	The WSA offers opportunities for sightseeing, horseback riding, photography, hiking and camping. ORV use and hunting does occur in the WSA. A motorcycle ORV race has used trails and arroyo bottoms in the WSA. During 1981, 708 visitor days and 850 visits were reported for the area with most occurring on the day of the race.	The WSA presently serves one Albuquerque high school class as an on-site laboratory for its semester study of environmental issues.	Native Americans have used the area for firewood gathering and hunting. Some use continues presently. Traditional uses within the boundary of the WSA by Native Americans are expected to continue.	The western boundary of the WSA lies within a proposed 500 kV transmission line corridor.	Several wildlife water units with enclosure fences are planned for construction. Some existing stock tanks are scheduled for development for waterfowl use, which means cleaning and sealing of tanks, along with protective fencing of shoreline vegetation.
Portion Recommended Suitable	Same as entire WSA.	No active or potential watershed treatment projects have been proposed.	The portion recommended as suitable would provide a situation similar to the entire WSA with the exception of excluding 622 acres within allotment numbers 0057 and 0058.	The existing and potential use pertaining to forest products would be the same as the entire WSA.	The opportunities for the various recreation activities within the portion recommended suitable would be similar to those discussed in the entire WSA as a result of only a small portion recommended nonsuitable.	The existing and potential use of the portion recommended as suitable would remain the same as under the entire WSA.	The existing and potential uses of the portion recommended as suitable by Native Americans would remain the same as under the entire WSA.	The western boundary of the portion recommended lies within a proposed 500 kV transmission line corridor.	The existing and potential use of the area associated with wildlife would remain the same as under the entire WSA.
Portion Recommended Nonsuitable	No exploration or development activity associated with locatable, leasable or saleable minerals is occurring in this portion of the WSA. One oil and gas lease has been issued in this portion of the WSA, and one oil and gas application made. There are no producing wells. Exploration activity has been low.	No active or potential watershed treatment projects have been proposed.	This portion falls within allotment numbers 0057 and 0058. No range improvements are proposed for this area.	Because of low stand density, little use on the 622 acres is expected.	Though this area could provide opportunities for recreation, the size of 622 acres limits the amount of use which may occur in this area.	This portion could continue to be used for environmental studies.	Use of this portion of the WSA by Native Americans for traditional uses would continue.	No rights-of-way, easements, withdrawals, or permits are pending or anticipated in this portion.	No wildlife developments are planned for this area.

TABLE 3-4

EXISTING AND POTENTIAL USES, TAOS RESOURCE AREA WSAs

WSA	Minerals	Watershed	Livestock Grazing	Forest Products	Recreation	Education/Research	Native American Uses	Realty Actions	Wildlife	Other
Navajo Peak WSA Entire WSA	The geologic structure indicates a potential for oil and gas. Most of the WSA has been leased, but no drilling has taken place. Small uranium occurrences have been found in the vicinity of the WSA. There is presently no activity pertaining to nonenergy minerals and the potential for discovery of valuable minerals is low due to geologic formations and accessibility.	The WSA contains water catchments which are used as water control structures. Water from the Chama and tributaries is utilized by livestock and wildlife. No watershed treatment projects are scheduled for the WSA.	Five grazing allotments are located within the WSA. Two with AMPs completed. No winter use. The WSA supports approximately 4,062 AUMs.	350 acres of commercial ponderosa pine (50,000 board feet) and 1,500 acres of noncommercial pinyon-juniper (15,000 cords). There are no specific plans for future timber harvests or issuance of permits or sales of the noncommercial woodland products.	Floatboating, fishing, hiking, camping and hunting all occur within the WSA. Floatboating is experiencing the greatest growth and is expected to increase in the near future. Approximately 1,200 people floated the river in 1982.	Environmental education excursions are occurring on the Chama River. U.S. Fish and Wildlife Service is studying fisheries and riparian habitat along the Chama River in the WSA. Three forestry study plots outside the canyon are located within the WSA.	No known significant uses.	There are no pending or anticipated rights-of-way, withdrawals, easements, or permits being considered for this portion of the WSA.	Mule deer and elk inhabit the area in small numbers. Fisheries habitat is plentiful with rainbow and German brown trout being the major game species. Potential introduction of the river otter and sage grouse within the WSA.	
Portion Recommended Suitable	Low energy minerals potential; low nonenergy minerals potential.	Water use is primarily by wildlife. No watershed treatment projects are scheduled for the portion recommended suitable.	A small portion of all five grazing allotments would be located in the area recommended as suitable.	Low potential for harvesting the commercial and noncommercial forest products due to inaccessibility. Sales in this area are unlikely.	Same as entire WSA.	Environmental education excursions on the Rio Chama and U.S. Fish and Wildlife Service fisheries and riparian habitat studies are occurring in this portion.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA with the exception of the introduction of sage grouse.	
Portion Recommended Nonsuitable	Low energy minerals potential; low nonenergy minerals potential.	Within this portion are located water catchments used as water control structures. Water use primarily by livestock and wildlife.	Portions of all five allotments and most of the improvements are included within this area.	Favorable topography would allow the harvesting of forest products should any sales be planned in the future.	There is the potential for hiking, camping, hunting and ORV use in the area.	The three forestry study plots are located in this portion.	Same as entire WSA.	Same as entire WSA.	Potential for the introduction of the sage grouse. No fisheries habitat.	
Sabinoso WSA Entire WSA	Nearly all of the WSA is under lease for oil and gas, but no drilling or exploration has taken place. The potential for petroleum production is low. Three mining claims for uranium exist in the eastern portion of the WSA. Potential for valuable uranium deposits is unknown. The potential for non-energy leasable and saleable minerals is very low.	There are no existing productive uses for watershed purposes and no potential plans for watershed improvement within the WSA.	Nine grazing allotments are located within the WSA with the area supporting approximately 2,454 AUMs. An anticipated amendment to the Management Framework Plan for the area may include range improvement proposals for range management.	The potential for forest products consists of over 130 acres of ponderosa pine (20,000 board feet) and 1,000 acres of pinyon-juniper (3,000 cords). The denser stands of ponderosa pine and pinyon-juniper woodlands are found in the bottomlands along the lower slopes of the canyon and on the mesa tops in the southwest portion of the WSA. No harvesting is pending or anticipated.	Hunting and horseback riding make up the present recreational use of the area. Limited access precludes more hiking and camping opportunities.	No research or education study areas exist in the WSA.	No areas of religious significance are known.	No pending or anticipated realty actions are associated with this WSA.	Small numbers of mule deer, barbary sheep and imported ibex utilize the area's habitat. Water improvements would increase potential habitat values, however no specific plans have been scheduled at the present time for this area.	
Portion Recommended Suitable	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	
Portion Recommended Nonsuitable	None.	None.	None.	None.	None.	None.	None.	None.	None.	
San Antonio Entire WSA	No oil and gas leases are located in the unit. No locatable minerals are known to exist in this unit.	Several catchments provide water sources for livestock and wildlife. The Rio San Antonio has intermittent flows.	The WSA contains portions of four grazing allotments.	Minimal stands of pinyon-juniper offer low potential for fuelwood harvest.	ORV use occurs on the open plains of the unit. Some hiking within the Rio San Antonio canyon. Some antelope hunting opportunities are available on the open plains.	No research or education study is being conducted.	No known use of the area.	No realty actions are planned within the WSA. A telephone R.O.W. represents the eastern boundary.	The unit supports a yearlong habitat for pronghorn antelope. Herd size varies between 40 and 120. The area is also utilized by elk as a migration route and wintering ground. Some mule deer also forage on the plain during winter months.	None
Portion Recommended Suitable	None.	None.	None.	None.	None.	None.	None.	None.	None.	
Portion Recommended Nonsuitable	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	

ENVIRONMENTAL CONSEQUENCES

SUMMARY OF IMPACTS

Tables 4-1 and 4-2 summarize the environmental consequences described in the Wilderness Analysis Reports (WARs) located in Appendices A through G. These tables describe only those impacts determined to be significant. If any of the WSAs is designated as wilderness by Congress, a management plan for it will be prepared. This plan will provide the opportunity to incorporate measures to preserve wilderness characteristics through management policies prohibiting certain activities and nonconforming uses that would adversely impact those wilderness characteristics.

SOCIAL AND ECONOMIC IMPACTS

All resources known to exist in the WSAs were considered in relation to the potential impacts of wilderness designation on employment, income, investments, lifestyles and social values as they relate to quality of the human environment. The quantifiable impacts on local economy and social structure were not considered significant.

Local Attitudes and Perceptions

Wilderness designation would strengthen the negative feelings toward the BLM and the federal government of those who oppose wilderness, while lending some positive feeling toward these agencies by those who favor wilderness.

Wilderness designation would add factors of uncertainty and instability to the lifestyle of the ranching population. This group fears use and operation restrictions following designation. Their ultimate fear is that the loss of investment value and financing capability could result in the loss of their ranches and lifestyle.

Economic Conditions

Wilderness designations could result in increased ranch operating costs, but this cannot be shown with empirical data at this time. Historically, BLM grazing permits have contributed value to base ranch property and have been used as collateral for loans to finance ranch purchases. Some part of these values may be lost, but the extent of these potential losses is uncertain at this time. The extent of impact will depend on the relationship between a WSA's grazing capacity and the total grazing capacity of an affected ranch.

Wilderness designation would secure to the WSA a value referred to as "preservation value". This value is of three types: (1) option value, defined as the willingness to pay for the opportunity to have access to wilderness areas for recreation use in the future; (2) existence value, defined as the amount of money people are willing to pay for the knowledge that natural habitat for plants, fish and wildlife are protected in wilderness areas; and (3) bequest value, defined as the willingness to pay for the satisfaction derived from endowing future generations with wilderness resources (Colorado State University, 1981).

The methodology developed for assigning economic quantification to this value was not used in this EA. This methodology is still under review by the BLM, and local data is not available for quantification.

TABLE 4-1

SUMMARY OF ENVIRONMENTAL CONSEQUENCES, RIO PUERCO RESOURCE AREA WSAs

Alternative	Acreage	Minerals	Soils, Watershed, Vegetation	Livestock Grazing	Forest Products	Recreation	Visual	Cultural	Native American Uses	Wildlife	Education/Research	Wilderness Values
Cabezon All Wilderness	8,038	Elimination of the potential to develop a possible small uranium mine and development of possible gypsum, sand, gravel and humate resources for regional demand.	Elimination of retention dams proposed to slow gully erosion and sediment transport. Protection of T&E plant species.	Elimination of the option to repair severe vegetation and soils damage on the Canyon del Camino Allotment.	Could curtail illegal woodcutting.	Eliminate recreation activities which require motorized activity. Ensure existing opportunities based on natural environment, continue; particularly the climbing opportunity.	Existing visual resource maintained.	Vehicular access restrictions would prevent impacts to cultural sites.	Limited vehicular access could limit some uses. Would retain natural setting on which activities often depend.	Restrictions on surface disturbing activity would provide protection for habitat. Could reduce legal and illegal furbearer harvest. Restraints on animal damage control and construction of fence enclosures could occur. Water development would not occur, which could preclude expansion of existing resource.	Preserve existing "natural laboratory". Opportunities for geologic and cultural study good.	Wilderness values would have long-term Congressional protection.
Amended Boundary	6,475	Same as All Wilderness.	Same as All Wilderness.	Removal of Canyon del Comino Allotment and Cucho Arroyo Allotment would eliminate conflicts with implementing erosion control projects, to arrest severe erosion problems. Proposed water projects would be developed on those two allotments.	Same as All Wilderness.	Conflicts with ORV use would be reduced.	Same as All Wilderness.	The area recommended unsuitable contains very few sites. Vehicular access restrictions on the remaining acres would limit impacts to cultural sites.	Same as All Wilderness.	Some waters would be developed.	Same as All Wilderness.	Same as All Wilderness.
No Wilderness (Amend the Existing Plan)	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Action	8,038	Mineral exploration and development could continue.	Possible reduced watershed quality. Soil and vegetation loss. Less protection for T&E plant species. Conservation actions would occur in order to retard severe erosion in the southern portion.	Full implementation of AMPs, including developed pipeline and waters.	No impact.	Primitive recreation opportunities would be reduced. ORV activities would continue.	Visual resources would be degraded.	Unrestricted access would leave the cultural sites subject to vandalism.	Natural setting on which these uses are often dependent, would be subject to surface disturbing activities.	Impact those species dependent on an unmodified environment. Allow a wider range of habitat management options, including full implementation of Rio Puerco Habitat Management Plan.	Degrade potential for "living laboratory".	No long-term Congressional protection. Management subject to administrative change in long run.
Empedrado All Wilderness	9,410	Elimination of the potential to develop a moderate size coal mine, and gypsum, sand, gravel, and humates for a regional demand.	Surface disturbing activities would be limited which would provide long-term protection.	Possible limitations on maintenance of existing improvements and construction of new developments. Approximately 1 1/4 miles of pipeline would not be constructed. Federal government would not spend approximately \$11,000 for construction and allottees would not spend approximately \$1,575 for annual maintenance. Traditional use of the pickup truck would be limited. Existing AUMs of use would be retained.	Illegal woodcutting could be curtailed.	Activities which require motorized activity would be limited. Primitive and unconfined recreation opportunities would be preserved.	Existing resources would be protected.	Enhanced monitoring of site condition may occur. Possible increase in vandalism. Would prevent impacts through vehicular access restrictions. Stabilization and excavation of sites could possibly be restricted.	Prevention of vehicular access could limit current uses. However, preservation of solitude and naturalness could enhance activities.	Restriction of surface disturbing activities would provide protection for habitat. Both legal and illegal furbearer harvest should be reduced. Restraints on methods of animal damage control and construction of fenced enclosures could occur. Wildlife water developments associated with pipelines would likely not occur.	Would assure preservation of existing "natural laboratory".	Wilderness values would be retained.
Amended Boundary	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.

TABLE 4-1 (Continued)

Alternative	Acreage	Minerals	Soils, Watershed, Vegetation	Livestock Grazing	Forest Products	Recreation	Visual	Cultural	Native American Uses	Wildlife	Education/Research	Wilderness Values
Empedrado (cont'd) No Wilderness (Amend the Existing Plan)	3,443	Mineral exploration and development could occur.	Protected area same as All Wilderness. On remaining area, watershed quality could possibly be reduced. Soil and vegetation loss could occur.	Planned pipeline could be constructed. Use of pickup truck would not be limited.	No impact.	Sightseeing and photographic opportunities concentrated in protected area would be protected. Opportunities in remainder of WSA are limited.	Sensitive viewshed would be protected.	Sites could be vulnerable to increased surface disturbing activities. Potential for vandalism could increase.	Depending on location, could result in destruction of sites. Need more data from tribes to more accurately assess.	Could aid in protection of riparian habitat in protected area. In remaining area, could impact those species dependent on an unmodified ecosystem.	Although somewhat mitigated by the protective designation, the potential for use as a "living laboratory" could be degraded.	Primary values concentrated in protected area and limited to preservation of visual values.
No Action	9,410	Same as No Wilderness.	Watershed quality could possibly be reduced. Soil and vegetation loss could occur.	Same as No Wilderness.	No impact.	Primitive and unconfined recreation relies on a predominantly natural environment which would not exist under a development oriented management.	Visual resources would be degraded.	Same as No Wilderness.	Natural settings on which uses are often dependent would be subject to surface disturbing activities.	Those species dependent on an unmodified ecosystem could be impacted. A wider range of management could occur, including development of wildlife waters and full implementation of Rio Puerco Habitat Management Plan.	Use as a "living laboratory" could be considerably degraded.	Wilderness character could be degraded or eliminated.
La Loma All Wilderness	10,310	Elimination of the potential to develop a moderate size coal mine, and possible gypsum, sand, gravel and humate resources for regional demand.	Surface disturbing activities would be limited which would provide long-term protection, including threatened and endangered species.	Possible limitations on maintenance of existing range improvements; traditional use of the pickup truck would be limited. Existing AUMs of use would be retained.	No impact.	Activities which require motorized activity would be limited.	Existing resources would be protected.	Enhanced monitoring of site condition may occur. Possible increase in vandalism. Would prevent impacts through vehicular access restrictions. Possibly restrict stabilization and excavation.	Prevention of vehicular access could limit current uses. However, preservation of solitude and naturalness could enhance activities.	Restrictions on surface disturbing activity would provide protection for habitat, particularly San Luis Mesa raptor habitat. Restrictions on animal damage control could occur.	Ensure preservation of existing "natural laboratory".	Wilderness values would be retained.
Amended Boundary	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Wilderness (Amend the Existing Plan)	3,200	Mineral exploration and development could continue.	Could reduce existing watershed and vegetation quality. Somewhat mitigated in protected area.	Use of pickup truck would not be limited.	No impact.	No limitations on motorized activity.	Visual resources would be degraded.	Could be vulnerable to increased surface disturbing activities. Could create potential for vandalism.	Natural settings on which uses are often dependent would be subject to surface disturbing activities.	Adequately protects sensitive raptor species in protected area. In remaining area, those species dependent on an unmodified ecosystem would be impacted.	Potential for study of raptor habitat would be preserved.	Degrade wilderness characteristics of solitude and naturalness in area not protected.
No Action	10,310	Same as No Wilderness.	Possibly reduce watershed quality. Soil and vegetation loss could occur.	Same as No Wilderness.	No impact.	Same as No Wilderness.	Same as No Wilderness.	Same as No Wilderness.	Same as No Wilderness.	Those species dependent on an unmodified ecosystem could be impacted, especially raptor species.	The potential for use as a "living laboratory" could be considerably degraded.	Wilderness characteristics could be degraded or eliminated.

TABLE 4-1 (Concluded)

Alternative	Acreage	Minerals	Soils, Watershed, Vegetation	Livestock Grazing	Forest Products	Recreation	Visual	Cultural	Native American Uses	Wildlife	Education/Research	Wilderness Values
Ojito All Wilderness	11,919	Elimination of the potential to extract possible gypsum, sand, gravel, and humate resources for regional demands.	Surface disturbing activities would be limited, which would provide long-term protection, including T&E species.	Possible limitations on maintenance of existing range improvements and construction of new improvements. Approximately 7 miles of pipeline would not be constructed. Government would not spend approximately \$77,000 on new construction and allottees would not spend approximately \$2,946 on annual maintenance.	Illegal woodcutting could be curtailed.	Activities which require motorized activity would be limited. Primitive and unconfined recreation opportunities would be preserved.	Existing resources would be protected.	Enhanced monitoring of site condition may occur. Vandalism may increase. Would prevent impacts through vehicular access restrictions. Stabilization and excavation could possibly be restricted.	Prevention of vehicular access could limit current uses. However, preservation of solitude and naturalness could enhance activities.	Restrictions on surface disturbing activities would provide protection for habitat. Should reduce both legal and illegal furbearer harvest. Restrictions on methods of animal damage control and construction of fence exclosures could occur. Wildlife water developments associated with pipelines would not occur.	Assure preservation of existing "natural laboratory".	Wilderness values would be retained.
Amended Boundary	11,297	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.
No Wilderness (Amend the Existing Plan)	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Action	11,919	Mineral exploration and development could continue.	Possibly reduce watershed quality. Soil and vegetation loss could occur.	Planned pipeline could be constructed. Use of pickup truck would not be restricted.	No impact.	Primitive and unconfined recreation relies on a predominantly natural environment which would not exist under development oriented management.	Visual resources would be degraded.	Could be vulnerable to increased surface disturbing activities. Potential for vandalism would continue.	Natural settings on which uses are often dependent would be subject to surface disturbing activities.	Those species dependent on an unmodified habitat would be impacted. A wider range of habitat management activities could occur, including development of wildlife waters and full implementation of the Rio Puerco Habitat Management Plan.	Potential for use as "living laboratory" would be considerably degraded.	Wilderness characteristics would be eliminated.

TABLE 4-2
SUMMARY OF ENVIRONMENTAL CONSEQUENCES, TAOS RESOURCE AREA WSAs

Alternative	Acresage	Minerals	Soils, Watershed, Vegetation	Livestock Grazing	Forest Products	Recreation	Visual	Cultural	Native American Uses	Wildlife	Education/Research	Wilderness Values
Navajo Peak All Wilderness	11,985	Low impact to mineral development because of low mineral potential.	Treatment of watershed would be restricted to nonmotorized equipment. Surface disturbing activities would be limited.	No significant impact on the range program because current levels of use may continue with no new developments pending.	Harvesting of 50,000 board feet of ponderosa pine and 1,500 cords of piñon-juniper would not be allowed, however no specific plans for harvesting are pending.	Restrictions on ORV use would have a low to moderate impact above the canyon rims. Primitive recreation experiences (hiking, floatboating, camping, etc.) would have a high positive impact on the natural values through preservation and protection.	Visual resources would be protected.	Would prevent impacts through vehicular access restrictions. Low impact would restrict site stabilization and excavation.	No impact since there is no indicated use in this area.	Would ensure habitat privacy by restricting motorized vehicles from the unit.	No impact from research and studies as it is considered an important use of the wilderness resource and as long as it is being conducted in such a manner as to preserve the area's wilderness character.	The wilderness values would be maintained through wilderness management.
Amended Boundary Rio Chama Wilderness Extension	4,032	Minimal impact due to location of mineralized area being primarily above the canyon rims, and a low potential for development.	Would provide protection from development on the canyon side slopes thus limiting soil and vegetation disturbance.	No significant impact on the range program as use levels can continue and the hindrance to maintenance of improvements with motorized equipment would be lessened.	Low impact on commercial timber harvesting and fuelwood gathering since the primary area in which these activities would most likely occur if planned have been excluded.	High positive impacts would result as the primitive recreation experience would be protected along the Rio Chama and ORV restrictions would not be increased outside the inner canyon.	The higher quality visual resources in the Chama Canyon would be protected. The area outside the boundary would be maintained as a VHM Class III in which disturbance may be evident but should remain subordinate to the natural character.	Historical sites along the river banks would be protected.	No impact since there is no indicated use occurring in the area.	Positive high impacts due to the insurance of the protection of the canyon wildlife habitat which is critical along the river corridor.	Same as All Wilderness.	Wilderness values within the amended boundary would be protected through the long-term by Congressional designation.
No Wilderness (Amend the existing plan)	4,032	Low impact due to location and access to minerals below the canyon rims. Mineral potential is considered low.	Enhance watershed values through increased protection and management. Surface disturbing activities would be minimal due to terrain limitations.	No significant impact on the range program as it would be allowed to continue at its present level.	Same as Amended Boundary.	High positive impacts through preservation of the primitive recreation experience in the Rio Chama Canyon and minimal ORV restrictions above the rim areas.	Visual resources would be protected within the area managed under special designation.	Historical sites along the river bank would be protected.	No impact, since there is no indicated use occurring in the area.	Positive benefits through protection of the critical wildlife habitat along the river corridor.	No impact as it appears that the current research and studies have not had any noticeable adverse impact to the area.	Wilderness values of the Rio Chama would be preserved by protective management.
No Action	11,985	No significant impact as a result of low potential for mineral development.	No significant impact as the potential for new development which may result in soil disturbance and vegetation modifications is low.	No impact to current livestock use levels and maintenance of improvements.	No impact since no specific plans for harvesting are pending.	Adverse impacts would result due to lack of protection for the primitive recreation experience that protective management would afford the Rio Chama Canyon. Motorized recreation uses could continue.	Visual resources would be maintained by the existing VHM Class II and III management objectives.	Unrestricted access would leave the cultural sites subject to increased vandalism.	No impact, since there is no indicated use occurring in the area.	Would create the potential for reduction in habitat privacy, surface character and stability of the productive wildlife area through the lack of protective management.	Same as No Wilderness.	Wilderness values may be lost due to a lack of protective management which would preserve the natural values of the Rio Chama Canyon.
Sabinoso All Wilderness	15,760	Low impact on mineral development since the potential for mineral development has been considered low.	Restrictions on surface disturbing activities would provide long-term protection to soils and vegetation within the WSA. No impact to watershed improvements since none have been planned for in the near future.	No impacts to current levels of authorized use. Minor inconvenience due to restricted vehicular access.	The potential for harvesting 20,000 board feet of ponderosa pine and 3,000 cords of fuelwood would be prevented.	Positive impact on primitive type recreation use (hiking, camping, hunting, and etc.). Low impact on ORV use, since it is presently minimal in the area.	Visual resources would be protected.	Will minimize impact on cultural sites through protective management and vehicular access restrictions.	No impacts.	Positive impact on ensuring habitat privacy through limitation of vehicles. Also potential for a low negative impact due to increase in recreation users in the area.	No impacts.	The wilderness values would be maintained through wilderness management.
Amended Boundary	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Wilderness (amend the existing plan)	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Action	15,760	Since the opportunity for exploration and development is still available there would be no significant impact.	No impact since the existing condition of these resources would essentially remain unchanged.	No impact as use would continue at its present level and maintenance could be done with the convenience of motorized equipment.	No harvesting is anticipated. If harvesting is authorized, the potential would be low due to terrain and legal access limitations.	Low impact to the recreation resource due to lack of present legal access.	The condition of the visual resources would essentially remain unchanged since no major developments are planned for the area.	No immediate impact on cultural resources in the area.	No impacts.	No impact due to limited use and resource development in the area.	No impacts.	No significant short term impacts but wilderness values could be degraded over the long-term by resource development.

TABLE 4-2 (Concluded)

Alternative	Acreage	Minerals	Soils, Watershed, Vegetation	Livestock Grazing	Forest Products	Recreation	Visual	Cultural	Native American Uses	Wildlife	Education/Research	Wilderness Values
San Antonio All Wilderness	7,050	Exploration and development of minerals would be prevented. The potential for mineral development has been determined to be low.	Restrictions on surface disturbing activities would provide long-term protection to soil and vegetation. Watershed treatment would be restricted to nonmotorized equipment.	No significant impact on the range program, since current level of use could continue and no new developments are currently planned for construction.	No existing or anticipated timber harvests or vegetative sales. No impact.	Restrictions on vehicular access would occur but would have a low impact on present use. Hiking and backpacking would be enhanced by wilderness designation.	Visual resources would be protected.	Sites would be protected. Site vandalism by individuals gaining access with motorized vehicles would decrease.	No impacts.	Would improve habitat privacy by restricting motorized vehicles. Antelope habitat would benefit primarily.	No impacts.	Wilderness values would be maintained through wilderness management.
Amended Boundary	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Wilderness (amend the existing plan)	0	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.	For this WSA, this alternative was not assessed.
No Action	7,050	Little impact, since the potential for mineral development is low.	No significant changes in the watershed conditions or disturbance to soils and vegetation are expected to occur.	No impacts to the range program. See All Wildernes.	No impact, since no timber harvests or vegetative sales are anticipated.	The potential for protection of the primitive qualities of the Rio San Antonio Canyon would not be addressed and could be impacted by increased ORV use.	Visual resources would be maintained as rated. VFM Class II and III.	No impacts.	No impacts.	No significant impacts to wildlife.	No impacts.	Wilderness values would not be impaired unless increased ORV use began disturbing the solitude of the Rio San Antonio.

CHAPTER 5

CONSULTATION AND COORDINATION

PURPOSE OF SCOPING

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) provide for an early and open process to determine the scope of issues to be addressed in an environmental analysis, and to identify the significant issues related to the proposed alternatives. This process is termed "scoping". In addition, scoping requires the lead agency to inform and involve affected federal, state, and local agencies, Indian tribes, and other interested parties. The process is designed to identify and emphasize the significant issues and eliminate from detailed consideration those that are either not significant or have been covered by earlier environmental review. This process results in a more concise document.

SCOPING ACTIVITIES

During the study phase of the wilderness review process, various federal, state and local agencies, interest groups, Indian tribes and individuals were contacted. These contacts were made to inform the public about the wilderness study process, gather resource information, and identify significant issues to incorporate into the Wilderness Analysis Reports (WARs). An extensive mailing list has also been assembled throughout the wilderness inventory and study process to ensure that all interested parties are kept informed of the progress of the wilderness review.

An overview of public involvement (along with other consultation and coordination efforts by both Resource Areas) are discussed in the WARs located in the Appendix. The concerns voiced by the public at the open houses held during March 1982 and through their letters have been varied. The primary issue expressed by the proponents of the designation of various WSAs is the need to preserve or protect the natural character and its wilderness values. Opponents have highlighted such problems as the presence of human impacts and the possible limitations that wilderness designation would have on mineral development and livestock operations in the WSAs.

The comments on this draft document will determine the nature and scope of the Final EA. Comments on this Draft EA are being requested from the government agencies, Indian tribes, interest groups and individuals.

LIST OF PREPARERS

This EA was prepared by BLM personnel from the Albuquerque District Office, including the Rio Puerco and Taos Resource Area Offices. The report writers and support personnel to this EA effort are indicated in Table 5-1.

TABLE 5-1

LIST OF PREPARERS

Name	Assignment	Report Writers/Reviewers	
		Education	Experience
John E. Bristol	EA Coordinator	BS Landscape Architecture	BLM - 5 yrs., USFS - 6 yrs. Landscape Architect
Ray Armenta	Realty Actions	BA Political Science	BLM - 11 yrs. Realty Specialist
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Debbie Begalle	Forest Products	BS Forestry	BLM - 5 mos. Forestry Technician
Angela Berger	WAR Team Leader, Technical Coordinator, Recreation, Visual Resources, Wilderness Criteria	BS Secondary Education MS Outdoor Planning	BLM - 3 yrs. Outdoor Recreation Planner, 2 yrs. District Wilderness Program Leader, 1 yr. Sup. Multi-Resource Staff (RPRA)
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Steve Craig	Water Resources	BS Geology MS Geology	BLM - 7 mos., USGS - 1 1/2 yrs. Hydrologist
Harry DeLong	Minerals	Geology Student	BLM - 1 yr. Physical Science Technician, 2 1/2 yrs. Draftsman
Mike Fisher	Forest Products	BS Forest Management	BLM - 6 yrs. Fire/Forestry, USFS - 3 yrs.
John Foster	Range, Vegetation	BS Biology MS Range	BLM - 6 yrs. Range Conservationist
Kent Hamilton	Social and Economic Factors	BS Agricultural Economics	BLM - 5 yrs., BIA - 16 yrs. Economist and Land Use Planner
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Tony Lutonsky	Cultural Resources	BS Anthropology	BLM - 9 yrs. Archeologist
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TABLE 5-1 (Concluded)

Report Writers/Reviewers (Cont'd)			
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Name	Experience (BLM)	Name	Experience (BLM)
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Jeffery S. Nighbert	4 yrs. District Cartographer		

APPENDICES

APPENDIX A

WILDERNESS ANALYSIS REPORT

CABEZON WILDERNESS STUDY AREA

NM-010-022
ALBUQUERQUE DISTRICT

RIO PUERCO RESOURCE AREA



SECTION 1

GENERAL DESCRIPTION

LOCATION

The Cabezon WSA (WSA;NM-010-022) contains approximately 8,038 acres of public land, and is located approximately 15 air miles due west of San Ysidro, New Mexico. It is bordered on the north and south by maintained roads, on the west by property boundaries and maintained road, and on the east by a combination of a powerline right-of-way (NM-559354) and a maintained road. (Refer to Map A and Map B). The U.S. Geological Survey topographic map that covers this area is Cabezon Peak (7.5 minute quadrangle).

CLIMATE AND TOPOGRAPHY

The Cabezon WSA, comprised of 8,038 acres, lies within the Navajo section of the Colorado Plateau physiographic province. The climate is semi-arid and the landforms strikingly reflect erosive processes associated with the arid cycle. Three principal landforms occur within the Cabezon WSA: (1) the eroded volcanic neck of Cabezon Peak; (2) the talus-covered slopes at the base of the neck; and (3) the incised mesa topography that characterizes the remainder of the WSA. The Navajo section consists mainly of sub-horizontal sandstone beds with lesser amounts of shale that has been subjected to great erosion.

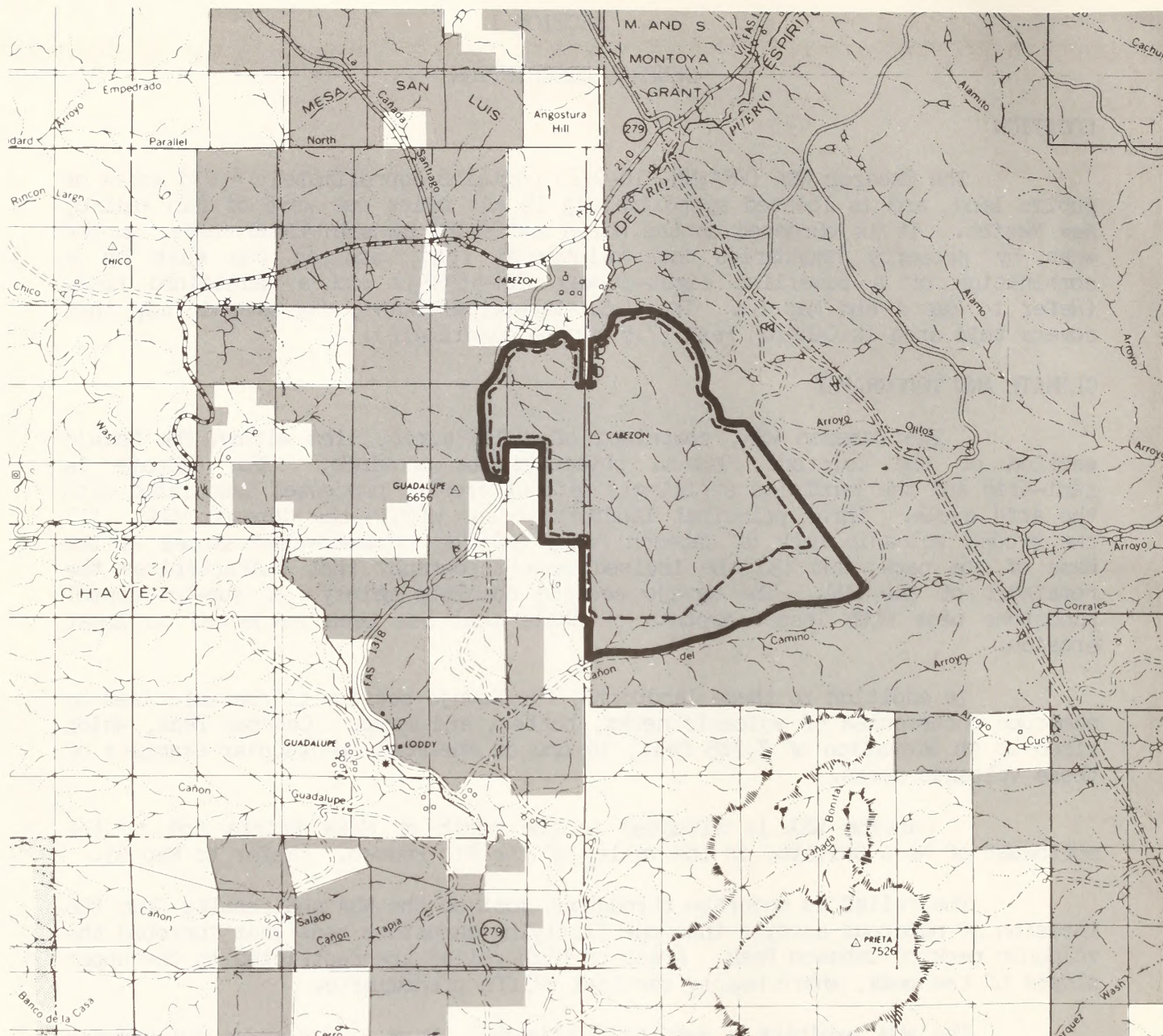
In addition to these landforms, the Navajo section is characterized by numerous occurrences of volcanic necks, buttes, and mesas. Cabezon Peak, which rises to an elevation of 7,785 feet, is one of the most spectacular examples of these volcanic necks.

Cabezón WSA is situated to the north of Mesa Prieta and to the northeast of Mesa Chivato, in the valley of the Rio Puerco. (Refer to Map B).

The relief is moderate throughout most of the WSA and results from the incision of numerous arroyos into the flatlying sandstone beds that surround the volcanic neck of Cabezon Peak. Areas of high relief are restricted to the upper slopes of the peak, where nearly vertical cliffs predominate.

The WSA exhibits a semi-arid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic of the area. Winter moisture comes mainly in the form of snow. These frontal storms occur between October and May. The average snowfall in the area is more than 37 inches. Summer precipitation comes as violent convectional thunderstorms of high intensity and short duration. These thunderstorms are extremely unpredictable in their rainfall patterns. General rains covering large areas are rare; therefore, certain localized areas may receive adequate moisture while adjacent ones receive none. Average annual precipitation is approximately 11 inches. About 40 percent of the precipitation falls in July and August.

Temperature, like precipitation, is extremely variable from season to season. Extreme temperatures range from 102°F in the summer to -20°F in the winter. Average daily temperatures in the warm months vary from 45°F in April to 70°F in July.



CABEZON WSA (NM-010-022)

Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- CONSIDERED FOR SPECIAL DESIGNATION

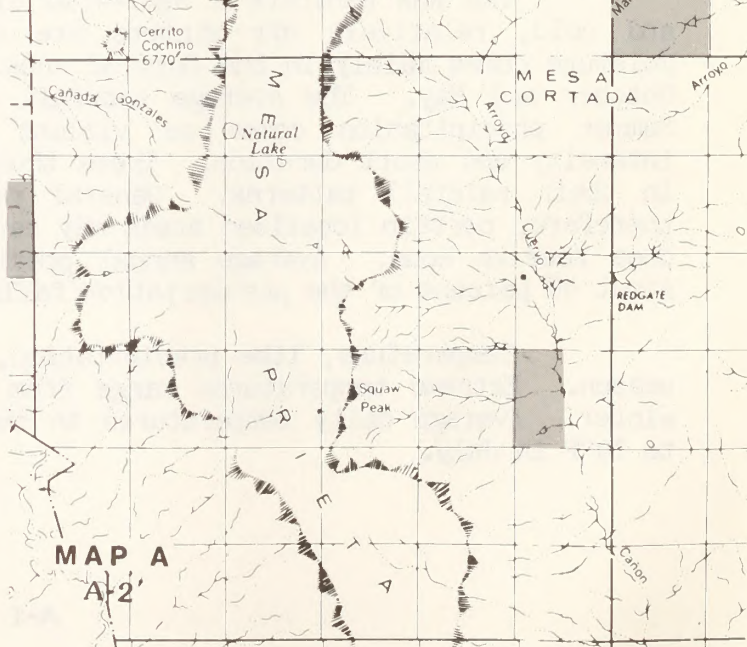
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 Inch=1 mile

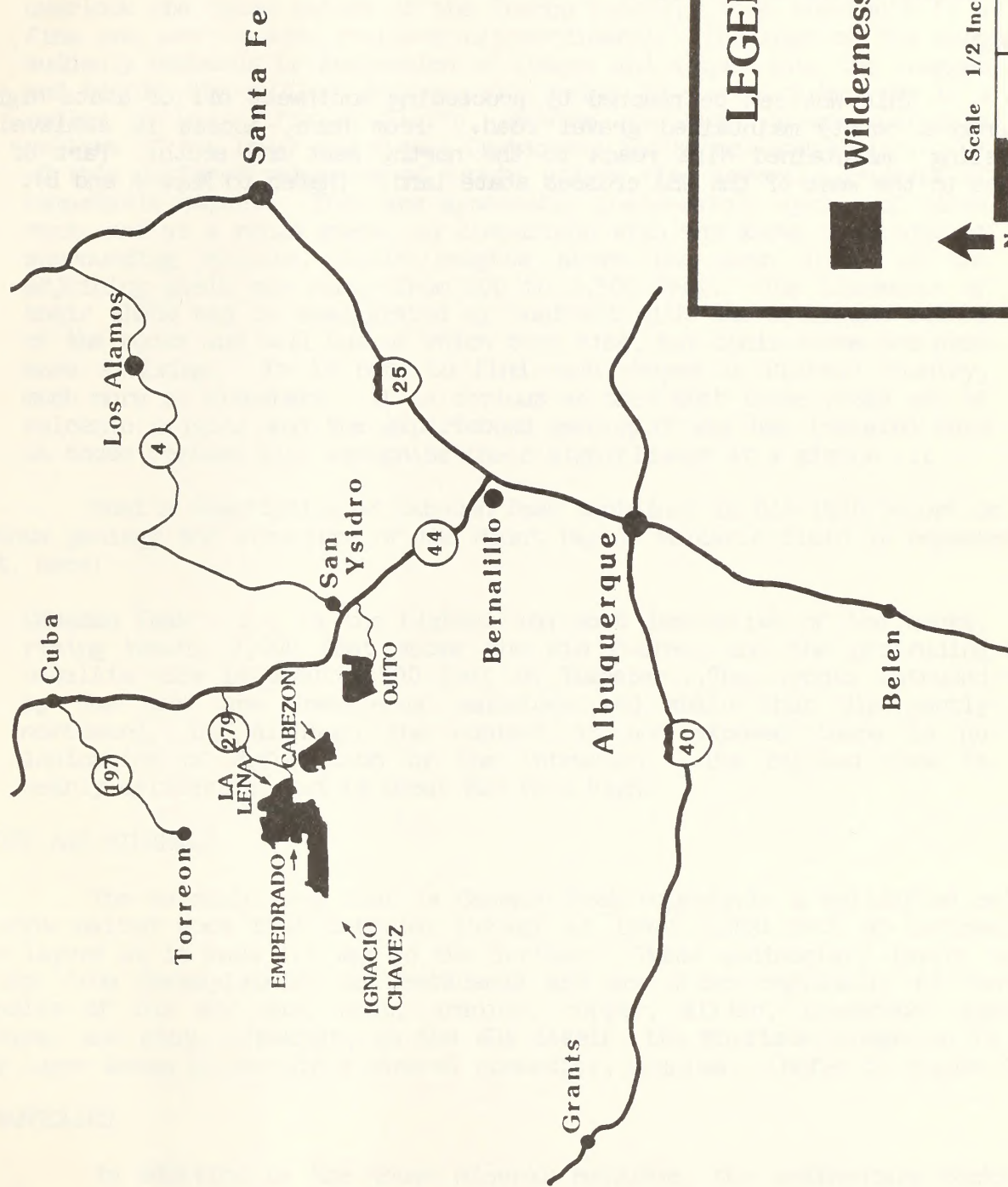
* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982




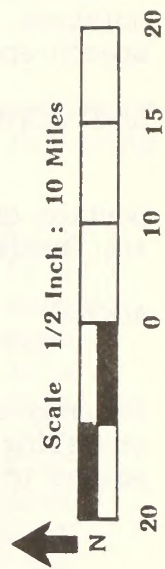
MAP A
A-2

MAP B GENERAL LOCATION



LEGEND

 Wilderness Study Area



The average growing season is approximately 160 days, beginning in May and ending in October. The full 160-day season is seldom realized because available moisture, rather than temperature, becomes the limiting factor. More moisture is generally available in July, August, and September, thus, warm season species are more adapted to the area.

LAND STATUS

The Cabezon WSA is made up of 8,038 acres of public land. The major portion of the WSA was originally lands acquired by the federal government under the Bankhead-Jones Act of 1937.

ACCESS

This WSA can be reached by proceeding southwest off of state highway 44 onto a county maintained gravel road. From here, access is achieved by traveling maintained dirt roads to the north, east and south. Part of the access to the west of the WSA crosses state land. (Refer to Maps A and B).

SECTION 2

EXISTING RESOURCES

GEOLOGY

A discussion of the geology of the Cabezon WSA is contained in Captain C.E. Dottan's report of 1885. Dottan's discussion includes the following comments:

If we stand upon the Eastern Brink of Mount Taylor Mesa we shall overlook the broad valley of the Puerco (east). (The spectacle is a fine one and in some respects extraordinary). The edge of the mesa suddenly descends by succession of ledges and slopes into the (rugged and highly diversified) valley-plain below. The country beneath is a medley of low cliffs or bluffs, showing the light browns and pale yellows of the lower and middle Cretaceous sandstones and shales. Out of this confused patchwork of bright colors rise several...objects of remarkable aspect. They are apparently inaccessible eyries of black rock, and at a rough guess, by comparison with the known attitudes of surrounding objects, their heights above the mean level of the adjoining plain may range from 800 to 1,500 feet. The blackness of their shade may be exaggerated by contrast with the brilliant colors of the rocks and soil out of which they rise, but their forms are even more striking. It is rare to find such shapes in Plateau country, much more so elsewhere. It is obvious at once that these rocks are of volcanic origin; and the experienced geologist who has traveled much in these regions will recognize their significance at a glance ...

Hunt's description of Cabezon Peak contained in his 1938 report on the igneous geology and structure of the Mount Taylor volcanic field is repeated in part, here:

Cabezón Peak . . . is the highest and most impressive of the necks, rising nearly 2,000 feet above the Rio Puerco, and the protruding basaltic core is about 1,500 feet in diameter...The...rocks intruded by the neck are Cretaceous sandstone and shale that dip gently northward, and although the contact is not exposed there is no indication of deformation by the intrusion. The exposed neck is nearly cylindrical and is about 800 feet high.

ENERGY AND MINERALS

The volcanic neck that is Cabezon Peak represents a solidified column of once molten rock that intruded through at least 6,000 feet of sedimentary rock layers as it made its way to the surface. These sedimentary layers range in age from Pennsylvanian to Cretaceous and are known regionally to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humates, and clay. However, in the WSA itself, the Morrison Formation is the only layer known to contain a mineral commodity; uranium. (Refer to Figure 1).

PALEONTOLOGY

In addition to the above mineral resource, the sedimentary rocks of the Cabezon WSA contain a large fossil assemblage. This assemblage includes a

Figure 1

**Stratigraphic Section,
Cabezon, Chamisa, Empedrado,
Ignacio Chavez, La Lena, and Ojito Wilderness Study Areas**

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER	LITHOLOGY
CENOZOIC	QUATERNARY		ALLUVIUM	
	TERTIARY		PEDIMENT	
			SANTA FE	
	CRETACEOUS		PICTURED CLIFFS	
			LEWIS	
			CLIFF HOUSE	
		MESAVERDE	MENEFEE	
			POINT LOOKOUT	
			CREVASSE CANYON	
			GALLUP	
			MANCOS	
			DAKOTA	
			BRUSHY BASIN	
MESOZOIC	JURASSIC	MORRISON FORMATION	WESTWATER CANYON	
			RECAPTURE	
			BLUFF	
		SAN RAFAEL	SUMMERVILLE	
			TODILTO	
			ENTRADA	
			UNNAMED SILTSTONE	
		CHINLE FORMATION	PETRIFIED FOREST	
			POLEO SANDSTONE LENTIL	
			SALITRAL SHALE TONGUE	
			AGUA ZARCA	
			SAN ANDRES	
	PERMIAN	MAGDA-LENA	GLORIETA	
			YESO	
			ABO	
			MADERA	
			SANDIA	
PALEOZOIC	PENNSYLVANIAN		ARROYO PENASCO	
	MISSISSIPPIAN		PRECAMBRIAN	
	PRECAMBRIAN			

substantial part of the Paleozoic and Mesozoic fossil record, although only fossils of Cretaceous age are found exposed at the surface. The environment of deposition of the Hosta Tongue of the Point Lookout Sandstone and the Satan Tongue of the Mancos Shale was such that the fossil record includes only those organisms adapted to a near shore environment. This includes marine invertebrates and occasional sharks teeth. (Refer to Figure 1).

WATER

Surface Water

The WSA lies in a tributary watershed (refer to the Glossary) of the Rio Puerco which ultimately flows into the Rio Grande. It is considered part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral. Runoff occurs at many times throughout the year, but volume mainly varies by season. Peaks commonly occur during the summer thundershower season from July through September, when tremendous volumes of runoff are generated. Comparison of rainfall data with discharge data for this season shows that up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). The water yield from Cabezon Peak ranges from 1 to 3 inches annually.

The average annual precipitation in the WSA is between 25 and 30 centimeters (between 10 and 12 inches), probably less than 4 percent of which is recorded as runoff downstream. The remaining 96 percent seeps into alluvium or bedrock units, or is lost through evapotranspiration.

Surface waters in the WSA include five reservoirs.

Ground Water

The WSA lies within the state-declared Rio Grande underground water basin. Ground water is not available at a reasonable depth except in shallow alluvium, and no ground water developments (wells and springs) are known to occur in the WSA.

The quality of ground water in the WSA ranges from fresh to moderately saline, but is commonly marginal for domestic uses. The present dominant water use in the WSA is by beef cattle, and wildlife.

SOILS

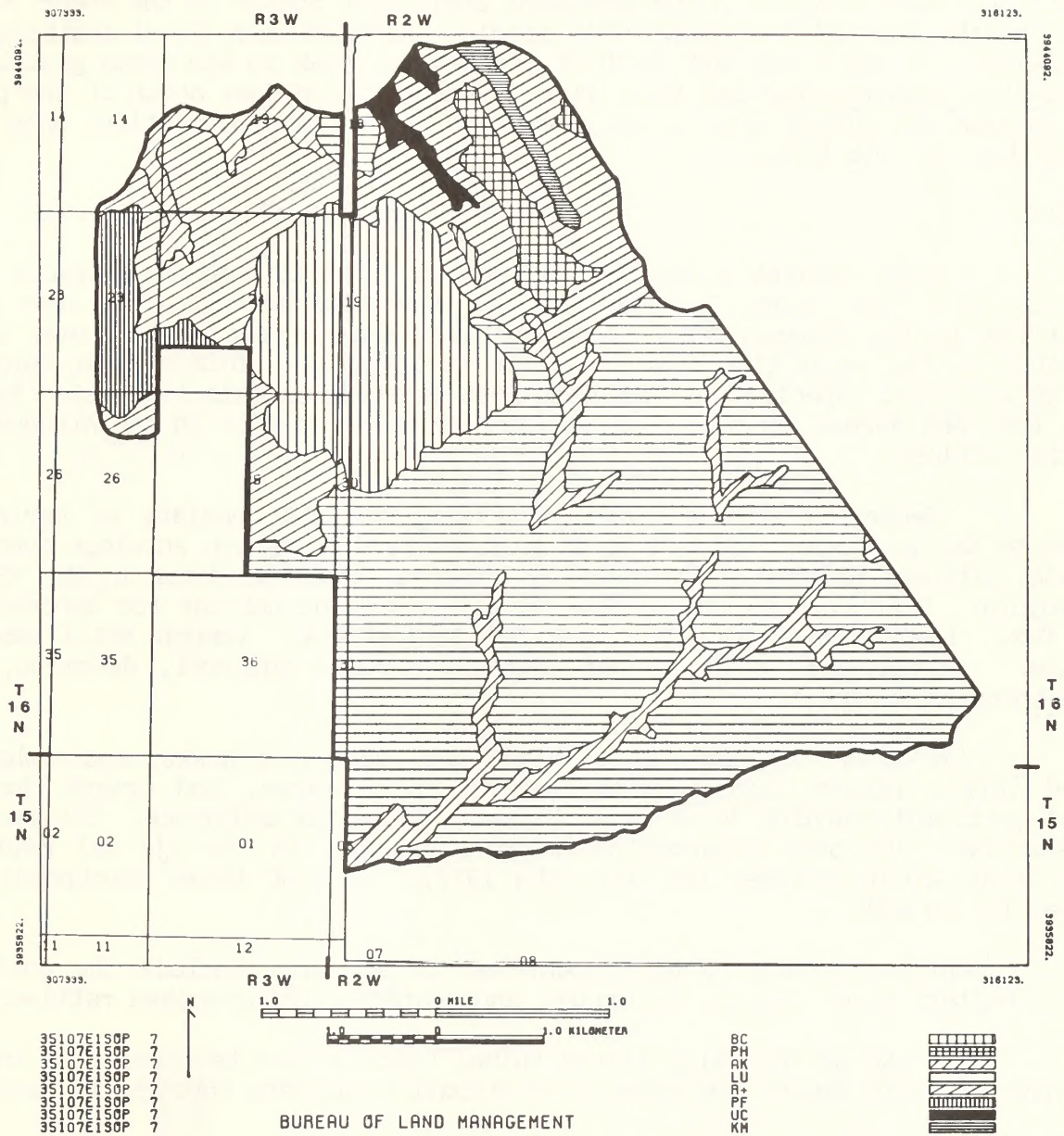
A large portion of the Cabezon WSA has undergone undesirable to critical levels of soil loss. Many of the soils are either severely eroded, currently eroding at critical rates, or highly susceptible to sheet and gully erosion. These conditions exist on two soil mapping units, Lu and Rt, the Shingle Complex and Travesilla-Shingle-Rock Outcrop Complex (refer to Table 1).

TABLE 1
SOILS, CABEZON WSA

*Unit	Soil Type	Percent Slope	Acres
Ak	Alkali Alluvial Land	0-5	659.9
Bc	Basalt Outcrop-Orthents-Ustolls Complex	3-50	1,036.7
Km	Kim Loam	3-8	68.8
Lu	Shingle Complex	3-25	4,310.2
Ph	Penistaja-Hagarman Association	2-5	378.6
Rt	Travesilla-Shingle-Rock Outcrop Complex	3-30	1,796.0
Uc	Unnamed Clay Loam	0-3	67.5

* (Refer to Soils Map C).

SOIL TYPES, CABEZON WSA



MAP C

VEGETATION

Table 2 summarizes the vegetation located in the Cabezon WSA. Refer to Map D for further clarification.

Distribution of Rare, Threatened, Endangered and Sensitive Plant Species

Cabezon Peak, a large volcanic plug, and the abutting basaltic flows that skirt it provide habitat for Mamillaria wrightii (pincushion cactus) and Pediocactus papyracanthus (blue gramma cactus). One population of Mamillaria wrightii has been located on the prominent shelf that breaks up the sheer relief of the north slope of the peak. This species has also been found scattered on the lowlands to the north and south of the Cabezon Peak in the grama grassland. Pediocactus papyracanthus has been found in one location just north of the peak. Both species are prized by collectors who usually decimate populations once they locate them (Knight 1981).

WILDLIFE

Eight habitat sites and two natural special habitat features (the volcanic neck that forms Cabezon Peak and the associated bluffs) have been identified in the Cabezon WSA. The habitat sites correspond to range sites described in the vegetation section (refer to Table 2). This habitat supports some 90 vertebrate species. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Albuquerque District Office).

Generally, the wildlife inhabiting the WSA consists of varieties common to the southwest region. Both mule deer and pronghorn antelope occur in the WSA, although neither are abundant. The most common predator in the WSA is the coyote. Rocky slopes and bluffs provide excellent habitat for bobcats and gray fox. Badgers have also been sighted in the WSA. Common small mammals include: cottontails, white-tailed antelope, ground squirrel, deermice, and white-throated woodrats.

The most commonly sighted birds are red-tailed hawks, sparrowhawks, horned larks, pinyon jays, ravens, western meadowlarks, and Oregon juncos. Scaled quail and mourning doves occur in small to medium abundance. Six species of waterfowl have been reported as using stockponds in the Ojo del Espirito Santo Grant which includes the WSA (BLM 1977). Two of these stockponds are located in the WSA.

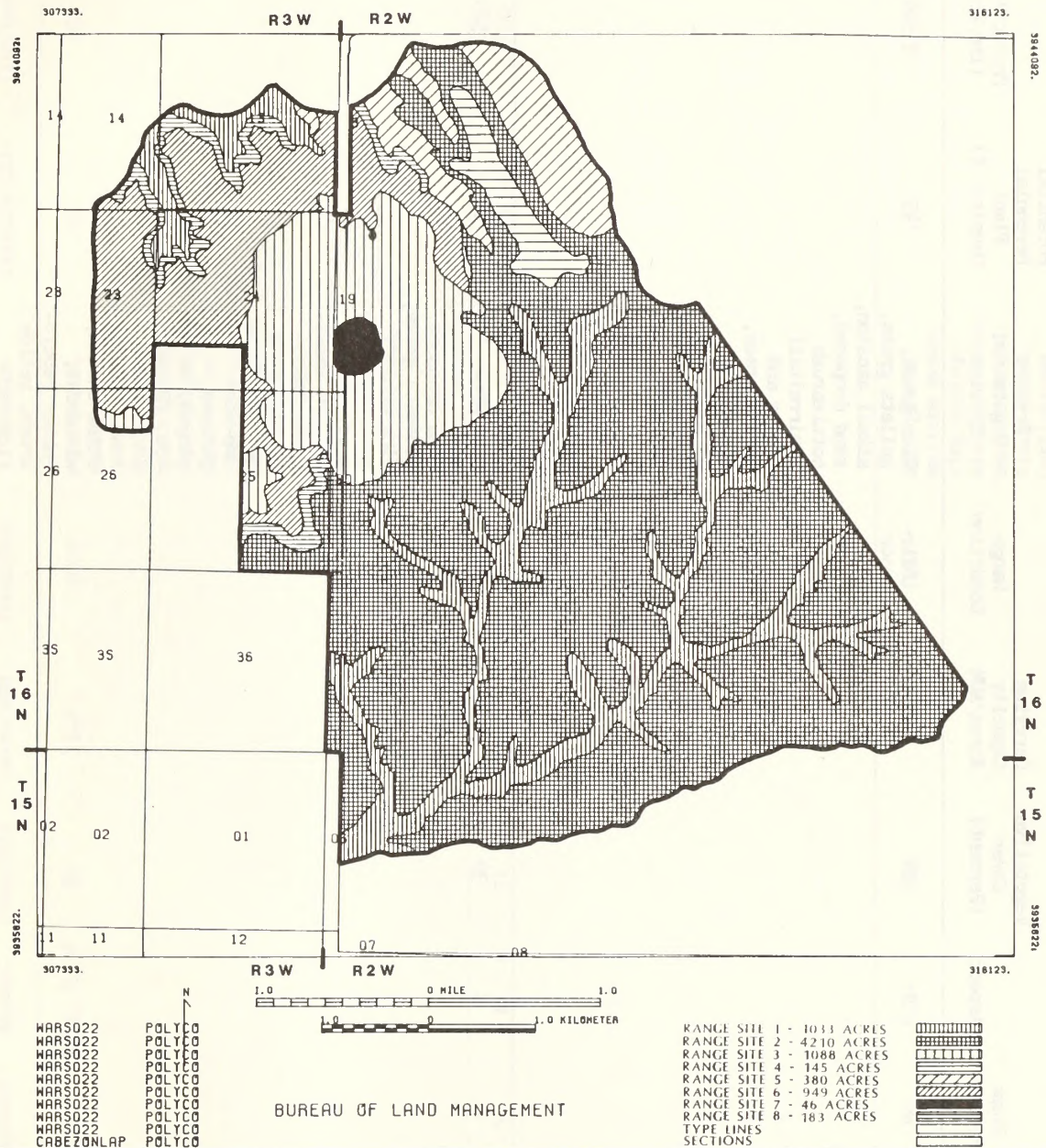
Reptiles likely to be encountered in the area include the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

No state or federally listed animal species have been reported in the WSA; however, bald eagles are known to occasionally migrate through the area.

VISUAL RESOURCES

Scenic quality may be best described as the overall impression retained after driving by, walking through, or flying over a parcel of land. Cabezon Peak has been given a scenic quality rating of Class A, based on an assessment of seven key factors (landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification). Because of the peaks

VEGETATION, CABEZON WSA



MAP D

TABLE 2

VEGETATION, CAREZON WSA

Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grama-Galleta Steppe	6	S	24	5.5	fair-poor	Blue grama, galleta grass, alkali sacaton, sand dropseed, bottlebrush, squirreltail, needle and thread grass, winterfat, broom snake-weed, fourwing saltbush	45	2,500	Alkali sacaton, blue grama, galleta grass, sand dropseed, burro grass, fourwing saltbush, winterfat, broom snake-weed, yellow flowered prickly pear, walkingstick cholla	080-Billings Variant Silty Clay
2	Pinyon-juniper woodland	6	S	30	8.3	fair	blue grama, alkali sacaton, sand dropseed, sidecoats grama, ring muhley, bottlebrush, squirreltail, western wheat-grass, shade-scale, broom snake-weed, one-seed juniper, pinyon, mormon tea, fringed sage, cliff rose, walking-stick cholla, winterfat, rubber rabbit-brush, yellow flowered prickly pear	15	525	Sidecoats grama, Indian rice-grass, black grama, NM feather-grass, needle and thread grass, red threeawn, blue grama, galleta grass, winterfat, bigelow sage, alpine sulfurflower Wright Eriogonum, Soapstone yucca, one-seed juniper	060-Shingle Complex

TABLE 2 (Continued)

Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (#)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
3	Plinyon-juniper woodland	33	N, S, E, W	36	11.2	good	blue grama, galleta grass, needle and thread grass, black grama, bottlebrush, squirreltail, sideoats grama, alkali sacaton, sand dropseed, broom snake-weed, walkingstick cholla, winterfat, one-seed juniper, plinyon pine	20	450	blue grama, black grama, NM feathergrass, bottlebrush, squirreltail, galleta grass	100-Basalt Outcrop-Orthent Ustolls Complex
4	Grama-Galleta Steppe	4	N	31	6.2	fair	Alkali sacaton, galleta grass, blue grama, sand dropseed	20	450	Indian ricegrass, bottlebrush, squirreltail, blue grama, galleta grass, sand dropseed, red three-awn, ring muhley, fourwing saltbush, winterfat, broom snake-weed	050-Penist-aja-Hagerman Association
5	Grama-Galleta Steppe	4	N, S	46	5.3	fair	blue grama, galleta grass, ring muhley, alkali sacaton, sand dropseed, black grama, bottlebrush, squirreltail, fourwing saltbush, broom snakeweed, rubber rabbit-brush	15	1,135	Alkali sacaton, blue grama, galleta grass, bottlebrush, squirreltail, fourwing saltbush, winterfat, black greasewood, shadscale	090-Un-named Clay Loam

TABLE 2 (Concluded)

Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (#)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
6	Grama-Galleta Steppe	18	E, S, W,	18	11.2	fair-poor	Galleta grass, blue grama, alkali sacaton, sand dropseed, bottlebrush, squirreltail, ring muhly, Indian ricegrass, shadscale, rubber rabbitbrush, broom snakeweed, one-seed juniper, four-wing saltbush	15	60-80	Pinyon, juniper, Indian ricegrass, blue grama, bottlebrush, squirreltail, dry land sedge, big sagebrush, true mountain mahogany, antelope bitterbrush, shrub live oak, Gambels oak, golden-weed, soapweed yucca, broom snake-weed, pinque	010-Rock Outcrop-Travesilla -Persayo Assoc.
7	Barren	-	-	less than 2	-	-	-	-	-	-	100-Barren Rock Face and Talus Slopes
8	Grama-Galleta Steppe	60	S	8	56	fair	Alkali sacaton, Galleta grass, red threeawn, therbers muhley, shadscale, rubber, rabbitbrush, one-seed juniper	15	60-80	Pinyon, juniper, Indian rice-grass, bottlebrush, squirreltail, blue grama, dry land sage, big sagebrush, true mountain mahogany, antelope bitterbrush, shrub live oak, Gambels oak, golden-weed, soapweed yucca, broom snake-weed, pinque	010-Rim Rock-Rock Outcrop

high scenic quality rating, a Class II visual resource management recommendation has been made for it (USDI, BLM 1972). (Refer to Appendix 1 and 2 for an explanation of VRM classes).

The high vertical relief of this prominent peak, in contrast to the surrounding landscape adds favorably to the WSA's visual quality. Further, the WSA lacks esthetically discordant influences or modifications.

CULTURAL RESOURCES

Cultural resource inventory within the Cabezon WSA is limited to a reconnaissance of approximately one section (640 acres). Two sites have been recorded. One of these, reported as a small sherd scatter, appears to consist of pieces from the same vessel and should properly be considered an isolated artifact.

The other cultural value recorded is a multiple component site located on top of Cabezon Peak itself. This site has great importance both prehistorically and historically, as reflected by its National Register Status. Site file records indicate that a masonry-walled structure probably functioned as a prehistoric shrine. It retained at least 123 centimeters of wall height when last field-checked in 1977. Noted also at that time was apparent recent use of the structure and associated fireplace; this use suggests the location retains its function as a shrine for Native Americans today. Two earlier structures located just south of the shrine are represented by low rubble concentrations. Numerous artifacts, both prehistoric and historic, were noted during the field check.

Projections as to site type, density and significance are based on inventory and evaluation of a larger area or the vicinity surrounding an unknown or unreported study area. No Class I or true Class II inventories (refer to the Glossary) have been done within the Cabezon WSA or the Rio Puerco Planning Unit, but some Class III survey does exist on nearby areas. Excavation and analysis by Eastern New Mexico University in several locations within 6 miles (southwest) of the WSA has revealed that a sizeable prehistoric population (primarily pueblo) occupied the Puerco River drainage system just west of the WSA. This occupation includes a large Chacoan outlier and surrounding community that has a density of over 150 prehistoric structures within 1 square mile. A sizeable historic occupation also exists in this area, some evidence of which is located within the WSA. Using these known sites, recorded history, and evaluation of surrounding areas it can be assumed that the Cabezon WSA contains substantial and dramatic evidences of occupation and use by humans for over 10,000 years.

The prehistoric evidences of use, the rubble concentrations, the shrine, fireplace and related prehistoric artifacts indicate that great importance was placed upon Cabezon Peak. The site and vicinity apparently represent a station in the complex, little-understood prehistoric Chacoan signaling system. This signaling system, probably associated with a prehistoric road system, ties together the central Chaco Canyon with over 80 known related "outlier" communities dispersed over 30,000 square miles. Present knowledge of this system, its parts, relationships and even purpose is so limited that the known portion may be only a small fragment of the original.

The shrine on top of Cabezon Peak is located between Chaco Canyon and a large outlier (Guadalupe Ruin) about 6 miles to the south.

The great relative height of Cabezon Peak was of obvious importance to its prehistoric users. Visible from the shrine on top are Chacra Mesa, Red Mountain, Mount Taylor, Hoste Butte, the peaks around Cerrillos, and several other known Chacoan shrine locations; all of these were important in one aspect or another to the Chacoan system.

The Great Peak not only has had direct uses but has served as a land-mark. It is located at the intersection of two trails, probably prehistoric in origin; it falls upon the Santa Fe to Fort Wingate stage coach and Star Line freight routes; it is mentioned as a place in Pueblo and Navajo origin myths and therefore carries various names [Isleta Pueblo=Tchi'kuqienad; Jemez Pueblo=Wasema'a; Navajo-Tsenajin (Black Peak); Spanish=Cabezón (Big Head/Big Summit)].

Cabezón Peak has also been a traditional boundary marker for the easternmost part of the Navajo Tribal world. It is featured as a reference in virtually all area explorations and is specifically mentioned in association with area Spanish land grants as early as 1767.

American occupation of the area around Cabezon Peak began during the war with Mexico in 1846. During the next 30 years government troops and explorers crisscrossed the Cabezon Peak country. Accounts of the peak were recorded by Lieutenant James W. Abert in 1846, who was with General Kearny's exploration party that year. The first definite appearance of Cabezon Peak on official United States maps was in Lieutenant J. H. Simpson's report of Lt. Col. J. M. Washington's 1849 expedition against Navajos raiding out of the general area.

Ten years later, Captain John N. Macomb (Corps of Topographical Engineers) commanded an exploration party that headed out from Santa Fe toward Utah, looped back through Navajo country, and passed Cabezon Peak. Macomb and Professor J. S. Newberry, a geologist, wrote a detailed report published in 1872.

AIR QUALITY

Ambient Air Quality monitoring data for the general area surrounding the Cabezon WSA was collected during 1975 and 1976 by the State of New Mexico Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II Standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

The Cabezon WSA is composed of both public and acquired lands that are part of the Ojo del Espiritu Santo Land Grant. Because the grant was acquired under the Bankhead-Jones Act, all of the locatable minerals have been reclassified as leasables, and the exploitation of these minerals requires the issuance of a prospecting permit and lease. Those lands situated outside of the grant boundaries are public and are underlain by BLM-administered minerals, except for 75 acres of subsurface estate owned by the state of New Mexico. (Refer to Map A).

As of August, 1982, a total of 122 claims have been staked within the Cabezon WSA as well as 8 oil and gas leases field. No existing mines or wells exist within the WSA boundaries, and the level of exploration activity has been low.

Table 3 is a list of those mineral commodities that are known or suspected to occur beneath the WSA. It indicates that the highest potential for development is associated with uranium contained within the Morrison Formation. The geologic environment, the inferred geologic processes, the reported mineral occurrences and known mines or deposits indicate a high favorability for the accumulation of uranium. The completion of a successful exploration program could lead to the development of a moderately sized conventional underground mine or in situ leaching operation. All of the other commodities in Table 3 have only a low to moderate potential for development.

WATERSHED

The WSA is part of the Rio Puerco Watershed, which has one of the most severe soil erosion conditions in the United States. This watershed is one of the major tributaries of the Rio Grande, embracing approximately a third of the drainage that lies in New Mexico above Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth of the waters of the Rio Grande, yet it is the source of 56 percent of the sediment that obstructs the main Rio Grande channel (Waite 1972).

The major drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by overgrazing in the late 1800's and early 1900's. This past grazing use has resulted in extensive sheet, rill and gully erosion in all areas of the WSA except the slopes of Cabezon Peak. Gully erosion is a serious hazard along the drainages of livestock water locations because the vegetative cover has been depleted. Dry arroyos produce high sediment, and water flows after each torrential rainstorm. The main drainages are eroded to bedrock up to 10 feet deep, and side drainages are eroded by small rivulets of a few inches to 4 feet deep. The vegetation cover density of this part of the WSA cannot be increased substantially because the soil does not release water readily to plants (Clark 1975).

TABLE 3
MINERAL RESOURCE ASSESSMENT, CABEZON WSA

Mineral Commodity	Geologic Unit	Development Potential
<u>Locatables</u>		
Uranium and Thorium	Abo Formation	---
	Morrison Formation	4-B
	Dakota Formation	---
	Mancos Formation	---
Metals (Copper, Silver, Molybdenum and Gold)	Agua Zarca Member	3-B
	Abo Formation	3-B
	Madera Formation	3-B
Non-Metallics (Gypsum)	Todilto Formation	3-A
<u>Leasables</u>		
Oil and Gas	Sandia Formation	3-C
	Entrada Formation	3-C
	Dakota Formation	3-C
	Mancos Formation	3-C
	Mesa Verde Group	3-C
Geothermal	No Specific Geologic Unit	2-A
Sodium and Potassium	No Specific Geologic Unit	2-A
Coal	Dakota Formation	1-C
	Mesaverde Group	1-C
Bituminous Rock	No Specific Geologic Unit	2-C
<u>Salables</u>		
Sand and Gravel	No Specific Geologic Unit	3-C
Clay (Common Varieties)	No Specific Geologic Unit	3-A
Humates	Mesaverde Group	2-A
Petrified Wood	Mesaverde Group	2-A
Cinders	No Specific Geologic Unit	3-C

A - Insufficient Data; B - Indirect Evidence; C - Direct Evidence
D - Abundant Direct and Indirect Evidence

- 1 - The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.
- 2 - The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.
- 3 - The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.
- 4 - The geologic environment, the inferred geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

Adapted from GEM Study and Turner, BLM, 1982.

The slopes of Cabezon Peak have a slight erosion hazard, being covered by various-sized basalt stones that help retard erosion. The rolling foothills at the base of these slopes are broken by scattered pockets of moderately deep soil. The natural fertility of the soil is high; it is well-drained to aid in maintaining the good cover of native grasses, shrubs, and juniper and pinyon trees (Clark 1975).

The average rate of erosion for the WSA is moderate. The erosion occurring on the WSA can be further quantified as follows:

TABLE 4
EROSION, CABEZON WSA

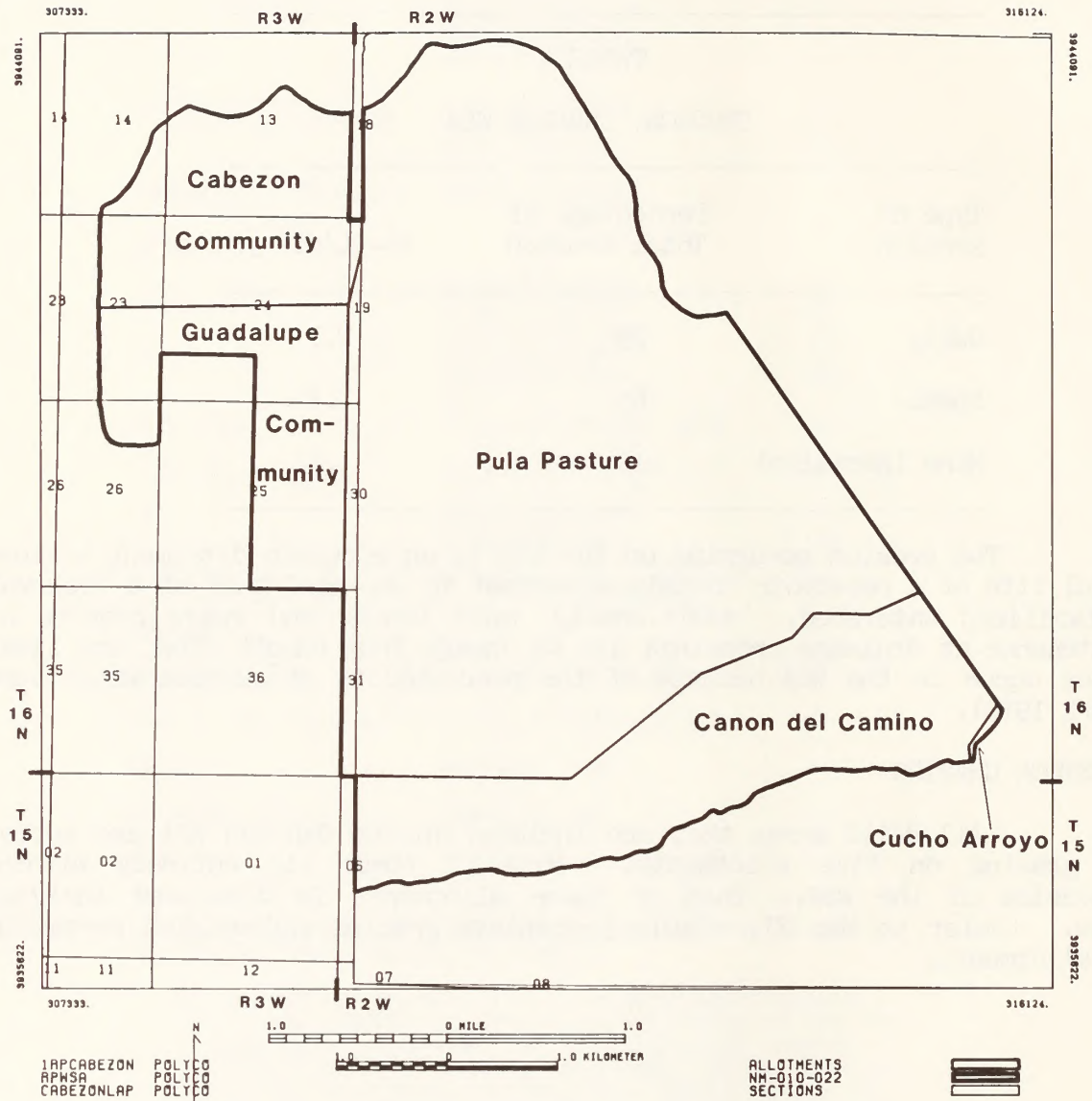
Type of Erosion	Percentage of Total Erosion	Ac-ft/mi ² /yr
Gully	25	2.1
Sheet	65	.7
Wind (Abrasion)	10	.1

The erosion occurring on the WSA is an economic detriment because the useful life of a reservoir in this watershed is one-half that of a reservoir in a stabilized watershed. Additionally, most fences and roads require annual maintenance at drainage crossings due to damage from runoff flow, and livestock losses occur in the WSA because of the poor quality of surface water supplies (Clark 1975).

LIVESTOCK GRAZING

All 8,112 acres that are included in the Cabezon WSA are authorized for grazing on five allotments. None of these lie entirely within the boundaries of the WSA. Each of these allotments is discussed individually below. (Refer to Map E). Table 5 displays grazing information pertaining to the allotments.

RANGE ALLOTMENTS, CABEZON WSA



BUREAU OF LAND MANAGEMENT

MAP E

TABLE 5

RANGE ALLOTMENT INFORMATION, CABEZON WSA

Allotment Name and Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Numbers	Season of Use
Pula Pasture, 0074	7,177	5,006	6	115 head	Yearlong
Canyon del Camino, 0053	4,936	1,466	1	69 head	Yearlong
Cabezon Community, 0044	4,422	856	4	58 head	Yearlong
Guadalupe Community, 0047	9,814	780	2	88 head	Yearlong
Cucho Arroyo, 0057	4,917	8	2	110 head	6 months (12/1-5/31)

Pula Pasture Allotment (#0074)

No grazing management systems have been proposed for this allotment.

It has been determined that 5.1 miles of water pipeline and two associated livestock water troughs are needed to attain improved livestock distribution patterns. Final adjustments to authorized livestock grazing numbers are contingent on the completion of the troughs and the results of a 4-year vegetation monitoring program.

Three dirt tanks and 7 miles of allotment boundary fence separate this allotment from three other allotments that have acreage within the WSA. These improvements are all within the boundaries of the WSA.

Canyon Del Camino Allotment (0053)

Three pastures of the allotment are being used, but this use is not systematic because the eastern pasture contains no permanent water. This pasture has two dirt tanks that only impound water during favorable summer rainfall years.

A four-pasture grazing system is proposed for this allotment; it includes 2.5 miles of interior fence, 2.9 miles of water pipeline, and four troughs. Of these improvements, 2.4 miles of water pipeline and the troughs are proposed for construction within the WSA. One dirt tank and 1.5 miles of fence already exist inside the WSA, with approximately 3.5 miles of fence along the boundary of the WSA.

Erosion control devices, such as retention dams and a series of sand dykes are also being considered in order to arrest the severe erosion occurring on this allotment.

Cabazon Community Allotment (#0044)

The construction of 2.2 miles of water pipeline and two associated livestock water troughs are deemed necessary to eliminate livestock grazing distribution problems.

One-half mile of water pipeline and an associated trough are proposed to be constructed within the WSA. One stock tank and 2.1 miles of allotment boundary fence exist between the Guadalupe Community Allotment (#0047), and the Pula Pasture Allotment (#0074) within the WSA.

Guadalupe Community Allotment (#0047)

The BLM's 1978 Proposed Rio Puerco Livestock Grazing Management Environmental Statement proposed a six-pasture grazing system. The water pipeline that is to serve this allotment must pass through the WSA in order to reach the Guadalupe Community Allotment.

Cucho Arroyo Allotment (#0057)

Approximately 8 acres of this allotment lie within the Cabazon WSA.

FOREST PRODUCTS

No authorized wood collection areas have been set up within the Cabazon WSA, nor are there any recorded fuelwood trespasses. Periodic pinyon nut collection is assumed to occur on a small scale.

RECREATION

Cabazon Peak has provided a popular climbing spot for many years. Several clubs and individuals utilize the peak annually, as shown by an informal register placed on top of the peak during the summers of 1980 and 1981, which has recorded approximately 300 persons to date. The climb is considered appropriate for both beginning and intermediate climbers, with an expansive view of the Rio Puerco Valley rewarding the effort.

Approximately 60 to 100 hunter days are spent annually in the WSA in pursuit of quail, doves, rabbits and coyotes. Trapping for coyote and bobcat varies with the price of pelts. Most of the recreation use associated with wildlife is restricted to within a half-mile of boundary roads.

Random off-road vehicle activity occurs in the Cabazon WSA by both motorcycles and four-wheel drive vehicles. Much of the four-wheel drive activity is associated with hunting.

EDUCATION/RESEARCH

Cabazon Peak itself provides interesting subject matter for geologic study. Research and educational values have historically been associated with Cabazon Peak and continue to do so (refer to Section 2; Existing Resources; Geology). The prehistoric and historic shrines contained within the Cabazon WSA also provide a good basis for research and education, as does the habitat for two species of threatened and endangered cactus (refer to Section 2; Existing Resources; Vegetation and Cultural Resources).

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used, and continue to use the Cabezon WSA for hunting and other uses. The shrine atop Cabezon Peak has traditional value to Jemez Pueblo, although its use today is less frequent than in the past. The Jemez Pueblo eagle-catching society has tentatively requested a BLM permit to engage in ceremonial activities in the fall of 1982 on and around Cabezon Peak. Use within this WSA by Jemez Pueblo (and probably others) for the taking of eagles was heavy until about 40 years ago.

Recent survey and interviews with officials of Jemez, Zia, and Santa Ana Pueblos and the Canyoncito Navajo Reservation generally show that many places of religious significance exist in and near Cabezon Peak, but that specific site locations are not known to the lay members of the tribes. Tribal elders know and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature.

REALTY ACTIONS

Powerline right-of-way (NM-559354) constitute part of the Cabezon WSA's eastern boundary, and lies near a proposed 500-kV transmission line corridor that would service the proposed New Mexico Generating Station. However, present information indicates that this transmission line could be accommodated entirely outside of the present boundaries of the WSA.

The area to the east of the Cabezon WSA and to the west of the Ojito WSA (refer to Map A) has been described as an important public land "window" through which future pipeline rights-of-way may pass.

WILDLIFE

The volcanic neck that forms Cabezon Peak, and the bluffs southwest of it, are particularly attractive to birds of prey and swallows for perching and nesting. These two formations are the major special habitat features identified in the WSA. Cabezon Peak has been extensively searched by aircraft in the past, and no sign of nesting or raptor use was evident. The lack of raptor use may be related to the fact that the peak is a pronounced landmark frequently visited by aviators and climbers. However, "whitewash" was noticed in the 1981 field season, indicating that raptors may have started using the peak.

Antelope use of the WSA is limited as these animals require more gentle terrain. The few antelope using the WSA are restricted to the eastern boundary. As trees and shrubs are relatively scarce, the WSA is only marginal mule deer range.

Because of the low number of deer, the area is not highly attractive to deer hunters. Estimated use is less than 20 hunter days annually. A report was received, however, of a trophy-class buck taken from the slope of Cabezon Peak in the 1981 season. No open season for antelope has occurred in the WSA.

Habitat for quail and doves is marginal, and existing quail numbers are low (USDI, BLM 1977). The topographic features and climate of the WSA appear favorable for quail, and it is felt that there is a high degree of potential for improvement.

During the wetter months of the summer rainy season, water is normally available for wildlife use in the pools, reservoirs and intermittent streams of the WSA; but with the approach of the subsequent drier seasons water becomes scarce. This is particularly true during late spring and early summer, the period when succulent vegetation is also scarce.

Waterfowl and shorebird habitat is restricted to approximately 2 acres of temporary water located in livestock reservoirs and soil stabilization projects. While none of these provide year-round waters, they are frequently full during the fall migration and commonly contain water in the spring as well. Where these reservoirs are protected from overutilization by livestock, either by fencing or a rest-rotation management system, the annual drawdown due to evaporation allows for an invasion of shoreline vegetation, which provides food and cover for ducks and shorebirds.

The Cabezon WSA is within the boundaries of the Ojo del Espirito Santo Grant and Upper Rio Puerco Habitat Management Plans (HMPs). The first HMP has the most effect on wilderness management considerations. This HMP proposes projects to eliminate limiting factors by constructing waters, perch sites, exclosure fences, and by maintaining stock ponds. These projects would benefit most species. Two exclosures associated with stock tanks are the only habitat improvements in the WSA.

Control of predators and rodents (primarily coyotes and prairie dogs) is sometimes requested by livestock operators when these animals conflict with livestock operations. No animal damage control requests have been received by the BLM for the WSA in the past 2 years. In response to a questionnaire sent out in 1978, however, several of the allottees expressed interest in being included in animal damage control operations.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

The imprint of man within the Cabezon WSA is substantially unnoticeable. It should be noted that it is the cumulative impact of the man-made intrusion or intrusions that is significant. This is a function of the size of the WSA, and the number and distribution of the impacts.

The Cabezon WSA contains a fenceline network, constructed of a mixture of wooden and metal posts. Six vehicular ways are used primarily for access to range improvements. These improvements consist of five small retention dams well-buffered visually by rolling topography. Because of the unyielding nature of the peak itself, few manmade imprints have occurred, leaving the WSA in an exceptionally natural state.

Solitude

The unique geology of the Cabezon WSA provides an outstanding opportunity for solitude for those who choose to climb the peak itself or wander among the foothills. The peak provides an excellent internal topographic buffer for utilization by several groups.

Opportunities for Primitive and Unconfined Recreation

The Cabezon WSA offers an opportunity for sightseeing and photography related to scenic, geologic and cultural values, as well as the occasion for climbing. (Refer to Section 3; Recreation, and the following discussion of special features).

Special Features

Cabezon Peak, a volcanic plug, is similar in form to Devil's Tower, Wyoming and related in origin to the volcanic neck at Shiprock, New Mexico. Although scores of volcanic necks are found throughout the high plateau country of Arizona, New Mexico, and Utah, Cabezon is, by its size and form, outstanding among them.

Cabezon Peak provides an excellent scientific opportunity to study the internal plumbing of a volcano. The volcanic neck has provided geologists with many clues regarding the geologic event that culminated with the spread of the lava flows of the Cebolleta Mesa. Although many of the volcanic centers that contributed lava to the flows are still buried beneath the basalt cap, Cabezon Peak represents one center that is now exposed for scientific study and inspection.

Populations of two threatened and endangered species have been located in Cabezon WSA; *Mamillaria wrightii* (pincushion cactus) and *pediocactus papyracanthius* (blue gramma cactus).

Significant prehistoric and historic special features are associated with the cultural resources of Cabezon Peak and its immediate surroundings. (Refer to Section 2; Existing Resources, Cultural).

The two special wildlife habitat features discussed in Section 3, Existing and Potential Uses, are among several geologic formations in the area valuable as habitat for non game species, including birds of prey.

Section 2 discussions of the visual resources and geology of Cabezon Peak highlight its significance as an important historic and contemporary visual landmark.

Multiple Resource Benefits

The Cabezon WSA contains many natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM. A more detailed discussion of the multiple resource benefits of wilderness designation may be found in Section 6 of this report, under the discussion of the impacts of the All Wilderness Alternative.

Diversity in the National Wilderness Preservation System

Ecosystems Present

The WSA, according to Robert G. Bailey (USDA, FS 1980), is classified under the Dry Domain in the Highland Province, and the Colorado Plateau sub-province. This area can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic.

A. W. Kuchler describes the two ecotypes found in the WSA as follows:

Grama-Galleta Steppe. Covers approximately 2,435 acres or 30 percent of the WSA.

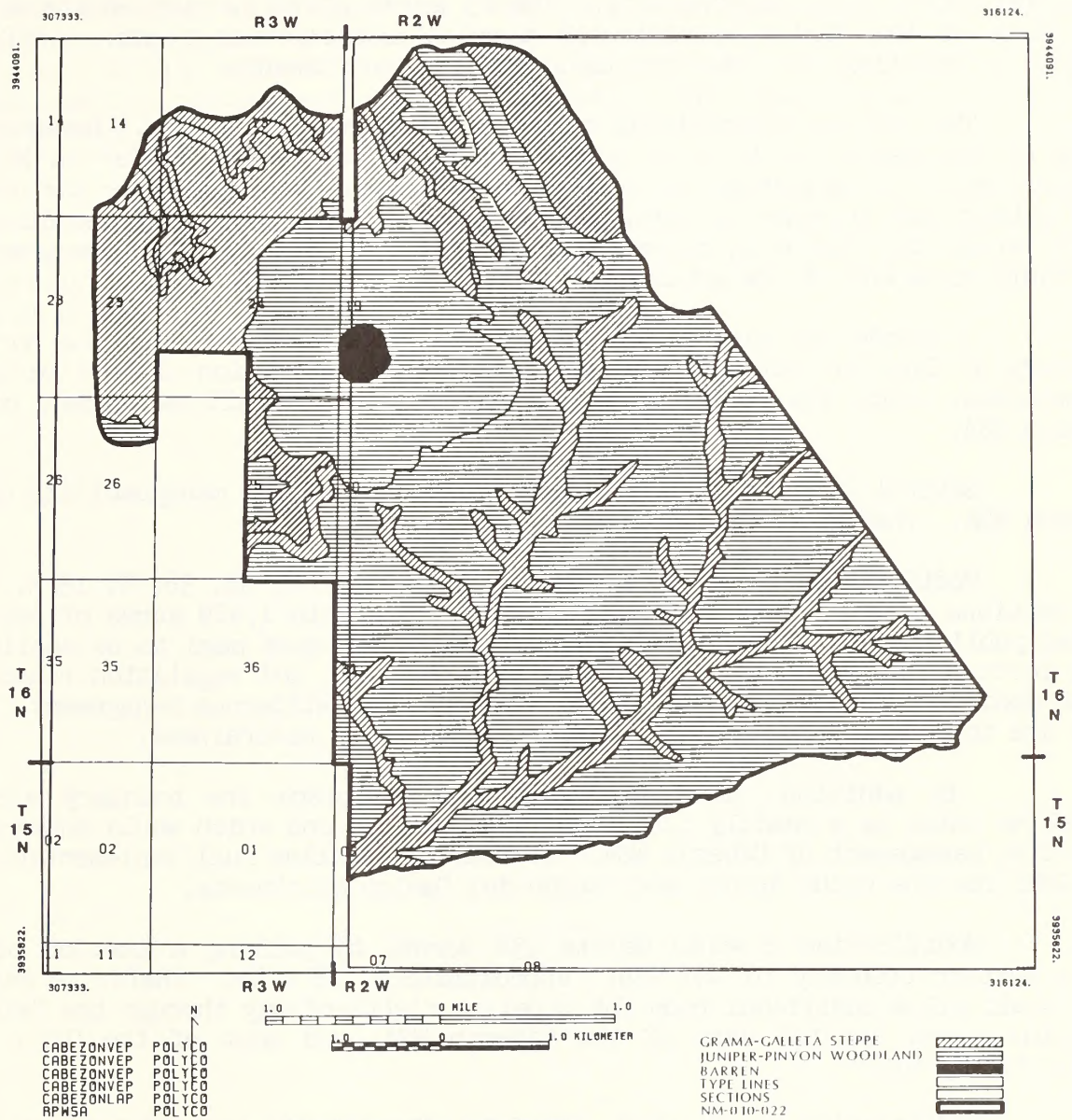
Juniper-Pinyon Woodland. Covers approximately 5,677 acres or 70 percent of the WSA.

Map F displays these ecosystems. Vegetation Map D, breaks each ecosystem into more refined site categories which are narrated in Table 2 (Vegetation, Cabezon WSA) located in Section 2, Existing Resources; Vegetation.

Distance From Major Population Centers

The Cabezon WSA is within 5 hour's driving time of Albuquerque, New Mexico, identified as part of a Standard Metropolitan Statistical Area (SMSA) in the 1980 census (USDC, BC 1981). It is within a 2 1/2 hour drive from Albuquerque or Santa Fe, New Mexico (refer to Map B).

ECOTYPES, CABEZON WSA



MAP F

MANAGEABILITY

To be recommended as suitable, the Cabezon WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall pattern of land management.

Valid existing rights in the Cabezon WSA are held by the livestock operators and include necessary actions to maintain such items as "grandfathered" range improvements. The 75 acres of subsurface estate held by the State of New Mexico, constitutes a valid and existing right. (Refer to Section 2, Existing and Potential Uses, Mineral Development).

The Cabezon WSA contains no private or state inholdings. However, the State of New Mexico holds 1,320 acres contiguous to the WSA (refer to Map A). Acquisition of this acreage by purchase or exchange would enhance the overall land pattern and improve the manageability of the WSA. The maintained dirt road would become the boundary, rather than property boundaries which are presently difficult to discern on the ground.

A slender 20 acre parcel of private land protrudes into the northern boundary of Cabezon (refer to Map A). Exploring acquisition of this parcel is recommended, since its inclusion would simplify the overall management of the Cabezon WSA.

Several boundary modifications would enhance the manageability of the Cabezon WSA. (Refer to Map A).

Modification 1, (T. 16 N., R. 2 W., Section 34, 35, 36; T. 15 N., R. 2 W., Sections 5 and 6), is suggested in order to delete 1,429 acres of severely eroded public land. Extensive erosion control techniques need to be applied on this portion, in order to salvage the existing soil and vegetation resources. These needed improvements would not be allowed under wilderness management, since they are in general, incompatible with the concept of naturalness.

In addition, this modification would place the boundary along a fenceline which is a readily identified boundary and one which would enhance the effective management of Cabezon WSA. It would also allow full implementation of the AMPs for the Cucho Arroyo and Canyon del Camino allotments.

Modification 2 would delete 134 acres, by pulling a portion of the WSA's eastern boundary to the west, approximately 1/8 mile. (Refer to Map A). This would allow additional room for pipeline rights-of-way through the "window" of public land located east of the Cabezon WSA, and west of the Ojito WSA. (Refer to Map B).

Modification 3, (T. 16 N., R. 2 W., Section 18) would delete 20 acres of private land incorrectly included during the wilderness intensive inventory.

SECTION 5

PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considerable public input obtained by a variety of methods including mass mailings, public meetings, open houses and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Considerable interest in the the management status of the Cabezon WSA has been expressed by the public. The WSA's close proximity to the cities of Albuquerque and Santa Fe and its resultant ease of access for such a large percentage of New Mexico's population was pointed out. Cabezon's wide variety of supplemental values, natural characteristic, and opportunities for solitude and primitive and unconfined recreation were also noted.

Opponents of wilderness designation for the Cabezon WSA discussed the effect of excluding the WSA from possible future mineral exploration and development, the presence of human impacts, and possible limitations on ranch operations. (Refer to the public response summary for the intensive inventory located in the appendix).

ALTERNATIVES AND IMPACTS

This section will discuss three alternatives for the Cabezon WSA; all wilderness, amended boundaries, and no action (manage under the existing plan).

ALL WILDERNESS ALTERNATIVE

Under the All Wilderness Alternative, the entire 8,112 acres of public land within the Cabezon WSA would be recommended as suitable for wilderness designation.

On any acreage designated as wilderness, the existing and potential uses (refer to Section 3,) would be regulated by the Wilderness Management Policy (1981).

This alternative would not have significant impacts on air quality in the Cabezon WSA, and for this reason is not included in the following discussions.

Impacts to Minerals

Locatable mineral development within the Cabezon WSA would be affected by wilderness designation because mining claims could not be located after January 1, 1984, and operations conducted after December 31, 1983, would include only development work, extraction and patenting.

Discretionary leasing and mineral materials sales would most probably cease following wilderness designation; only those leases in effect prior to designation would be allowed to continue. As of January 1, 1984, all of the minerals under lands designated as wilderness will be withdrawn from disposition under all laws pertaining to mineral leasing.

The net effect of these restrictions would be to significantly lower the potential for development of all locatable and leasable mineral commodities that may occur under the WSA. Although there is at least a moderate favorability for the occurrence of copper, silver, uranium, thorium, gypsum, oil and gas, sand, gravel, clay, and cinders, the designation of the Cabezon WSA as a wilderness would curtail exploration and prevent possible future extraction.

Given today's economic conditions, there is little demand for the extraction of copper, silver, uranium, thorium, bituminous rock, molybdenum, gold or clay, from Cabezon's reserves.

Although gypsum, sand, gravel and humates occur throughout northern New Mexico, any of these resources located in Cabezon would be considered economically attractive regionally. This occurs because extraction near the source of utilization is essential to achieving a acceptable profit margin.

If Cabezon WSA is recommended suitable for wilderness designation, additional surveys will be done by the United States Geologic Survey (USGS) and the Bureau of Mines (BM).

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

As discussed in Section 3, Existing and Potential Uses, the erosion and subsequent sediment transport from the Cabezon WSA contributes to downstream, off-site damage to reservoirs, fences, and roads. The depreciation of water quality in the Rio Grande, and ultimately, the amount of silt carried to Elephant Butte Reservoir, has a serious economic impact downstream because it affects irrigation and livestock water quality.

This erosion problem is particularly evident in the Canyon del Camino Allotment. (Refer to Map C). A serious need exists for watershed restoration where past grazing use has caused deteriorated soil and hydrologic conditions. Reestablishment of vegetation through livestock management alone will not be enough to restore the watershed condition.

Water control structures such as retention dams have been proposed in order to slow down the gully erosion and sediment transport.

Wildlife

Restrictions on surface-disturbing activities and mechanized activities would provide protection for wildlife habitat. Reduced vehicle access should reduce both legal and illegal furbearer harvest.

Restraints on methods of animal damage control and construction of fence enclosures could occur. Water development associated with the proposed pipeline would most likely not occur, which could preclude the expansion of the existing wildlife resource. (Refer to Section 3, Existing and Potential Use).

Visual Resources

Existing visual resources described in Section 2, would be protected; only minor modifications in the basic elements of the landscape may occur as a result of natural ecological changes and very limited management activity would be permitted.

Cultural

Site condition monitoring associated with surveillance could prove beneficial because over 80 percent of the Rio Puerco Resource Area's known sites suffer from significant natural deterioration. It is assumed that increased monitoring would take place under Wilderness designation. This would increase the ability to detect, and if warranted, to arrest serious deterioration at relatively early stages.

The wilderness management policy allows the natural decay of sites. Excavation and stabilization may be permitted on a case-by-case basis where the State Director determines that the project would not degrade the overall wilderness character and when such activity was needed to preserve the particular cultural resource. The increased public awareness of wilderness and thus the increased visitation could increase vandalism if proper visitor management tools are not employed.

Limited surface-disturbing activities would be allowed under wilderness designation. This could limit the destruction of the Cabezon WSA's cultural sites through other than natural causes.

Livestock Grazing

A management conflict on the Canyon del Camino Allotment (#0053) does exist. This allotment has sustained severe vegetation and soils damage. The proposed improvements for this allotment have been deemed absolutely necessary to arrest this severe damage. It is imperative these improvements be implemented as soon as possible, prior to Congress reaching a decision on the Cabezon WSA's suitability or unsuitability. (Refer to Section 3, Existing and Potential Uses, for a complete description of these improvements). It is felt this number of improvements would tip the scales in assessing the Cabezon WSA's naturalness, creating too high a density of man-made intrusions for the unit to absorb.

Only 8 acres of the Cucho Arroyo Allotment (#0057) are contained within the WSA, making management of the total allotment more cumbersome and complicated than necessary.

Livestock operations in the Cabezon WSA would be affected by wilderness designation. These effects may result from limitations imposed on the maintenance of existing range improvements and the construction of some proposed improvements. Although grazing is a permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, or location of improvements may occur in order to protect wilderness characteristics. The pipeline system proposed within the Cabezon WSA would not likely be constructed. The Federal government would not spend approximately \$88,000 constructing the pipeline and the allottees would not be responsible for approximately \$1,284 of annual maintenance.

The WSA presently supports 1207 Animal Unit Months (AUMS); the existing levels of livestock operations as well as necessary vehicular access and the maintenance of "grandfathered" range improvements are valid existing rights and would continue under wilderness designation.

Forest Products

It is assumed that increased management attention (such as regular patrol) would occur under wilderness designation and could curtail illegal woodcutting.

Recreation

Recreation activities that require motorized vehicles would be affected, including some hunting and motorcross activity; both are popular activities presently occurring within the Cabezon WSA. (refer to Section 3, Existing and potential Uses). Wilderness designation would ensure that the present opportunities for primitive and unconfined recreation would be available to meet high regional demands. Although some of these opportunities do exist outside of the WSA, the Cabezon WSA provides the natural setting upon which the outstanding recreation quality is dependant. This is particularly true of the climbing opportunity the Cabezon WSA provides.

Education/Research

Wilderness designation would ensure the preservation of the existing "natural laboratory" in the Cabezon WSA. Opportunities for geologic and cultural study are particularly good. (Refer to Section 3, Existing and Potential Uses).

Native American Uses

Limitation of vehicular access could limit Native American uses. However, the preservation of solitude and naturalness could enhance these activities, because they are often dependent on specific natural settings.

Realty Actions

The narrow "window" of public land sandwiched between the eastern boundary of the Cabezon WSA and the western boundary of the Ojito WSA may not be large enough to accommodate future pipeline rights-of-ways if both WSA's become designated wilderness. Moving Cabezon's eastern boundary to the west would help alleviate this situation.

AMENDED BOUNDARY ALTERNATIVE

Under this alternative 6,549 acres of public land within the Cabezon WSA would be recommended for wilderness designation (refer to Map A). The amended boundary would exclude 1,429 acres of public land in the southern portion of the WSA and 134 acres along the eastern boundary for those reasons stated previously in Section 4, Wilderness Criteria; Manageability. If the area within the amended boundary is designated wilderness, all existing and potential uses (refer to Section 3) would be managed under the BLM's Wilderness Management Policy (1981).

Impacts on Minerals

Same as the All Wilderness Alternative.

Impact to Other Resources and Uses

Range

Removal of the Canyon del Camino Allotment (#0053), and the Cucho Arroyo Allotment Number (#0057) from within the Cabezon WSA's boundary would eliminate conflicts with the implementation of erosion projects designed to arrest the severe erosion problem identified in both of these allotments. In addition, full implementation of the AMP would be allowed, which would further stabilize damaged soils and vegetation.

Realty Actions

Retracting a portion of the eastern boundary of Cabezon 1/8 mile to the west would allow "breathing room" for additional pipeline rights-of-way. (Refer to Map A).

Recreation

Conflicts with ORV use would also be reduced.

Wilderness

The reduced acreage is not significant enough to impact existing wilderness values, since most of these values cluster around Cabezon Peak and the foothills surrounding it.

Impact to other resources would remain the same as stated in the All Wilderness Alternative.

NO ACTION ALTERNATIVE

"No action" means that the Cabezon WSA would be managed as undesignated multiple use land. The most probable uses of the Cabezon WSA if it is not designated as wilderness would be livestock grazing, mineral exploration, and ORV use. Management actions calling for varying degrees of vegetative manipulation, water pipeline development and rangeland improvements have been identified by the wildlife and range programs. The Cabezon WSA wilderness characteristics would be subject to increased pressure for mineral exploration and development. (Refer to Section 3, Existing and Potential Uses).

Under the No Action Alternative the Cabezon WSA would be recommended nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses would continue without regard for the Interior Management Policy and Guideline for Lands Under Wilderness Review (1979).

The No Action Alternative would not have significant impact on forest products, air quality, realty action, range or minerals. For this reason, they are not included in the following discussion.

Impact to Wilderness Values

Mineral exploration and development, increased ORV activity and increased use of motorized vehicles would result in disruption of wildlife habitat, scenery, and vegetation as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to significantly impact naturalness. The fragile resources discussed previously (refer to Section 4, Wilderness Criteria; Special Features) would be particularly vulnerable to development-oriented management.

No protective designation has been proposed for the Cabezon WSA. The cumulative effect of this lack of a protective designation and the above management practices would be to degrade or eliminate Cabezon's wilderness characteristics.

Impacts to Other Resources and Uses

Soils, Watershed, Vegetation

Continued vehicular access and other surface disturbing activities, could result in additional ruts and create the potential for reduced watershed quality. This occurrence would also affect soils and vegetation, including threatened and endangered species. (Refer to Section 2, Existing Resources; Vegetation). However, all necessary actions needed to retard the severe erosion occurring within the southern portion of the Cabezon WSA, could be fully implemented.

Wildlife

Non-wilderness management could result in a significant increase in human activity and thus impact those wildlife species dependent on an unmodified ecosystem. However, a wider range of habitat management actions could occur under this alternative and in the long run, may produce a more diverse habitat for wildlife. The no wilderness alternative would allow the full implementation of the Rio Puerco Habitat Management Plan, by allowing the planned water pipeline and related facilities to be constructed.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Recreation

Opportunities for primitive recreation would be reduced as discussed under "Impacts to Wilderness Values" above. Primitive and unconfined recreation relies on the resource base of a predominately natural environment. Such an environment would not exist under development-oriented management.

Recreation relying on vehicular travel as well as motorcross use, would continue.

Education and Research

The natural setting supporting the special features discussed in Section 4, Wilderness Criteria, would be subject to increased surface disturbance and vehicular travel. This would considerably degrade the Cabezon WSA's potential for use as a "living laboratory". (Refer to Section 3, Existing and Potential Uses, Education and Research).

Native American Uses

The natural settings on which these uses are often dependant, would be subject to surface disturbing activities.

Visual

Existing visual resources would deteriorate.

RECOMMENDED ACTION

PROPOSED ACTION DESCRIPTION

It is recommended to support the Amended Boundary Alternative which recommends 6,475 acres of Cabezon WSA's original 8,038 acres, as suitable for wilderness designation.

RATIONALE

Cabezon WSA contains abundant, high quality wilderness characteristics. The rugged nature of Cabezon Peak and its foothills have sustained very little impact by man. The peak itself, displays exceptional opportunities to experience solitude and primitive and unconfined recreation. Cabezon WSA's wide variety of special features (refer to Section 4, Wilderness Criteria) is a particularly outstanding feature. Preservation of these significant values outweighs those other commodities that would be foregone by wilderness designation. These values could not be preserved through another type of designation.

Commodities foregone include the construction of a portion of the planned water pipeline and stock facilities; the development of several wildlife waters; the possible development of a small uranium mine; the development of possible gypsum, sand, gravel and humate resources for regional demand; curtailment of motorcross activity.

Adjusting the boundary as recommended would eliminate those portions of the Cabezon WSA that have extreme erosion problems which require immediate action to prevent further damage. These projects could not be constructed if the area were designated wilderness. It would also make additional acreage to the east of the Cabezon WSA available for future rights-of-way.

CONSISTENCY WITH OTHER PLANS

Several wildlife waters proposed in the Rio Puerco Habitat Management Plan (done in coordination with the New Mexico Department of Game and Fish) would not be developed.

There are no known additional inconsistencies with the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Wilderness Draft Environmental Assessment.

APPENDIX 1

CRITERIA FOR VISUAL RESOURCE MANAGEMENT CLASSES

- Class I - Applies only to classified special areas, e.g., roadless, wilderness, primitive, natural areas, etc. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
- Class II - Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.
- Class III - Landscapes with Class B scenery quality and high visual sensitivity in the background visual zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground visual zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- Class IV - Landscapes with Class B scenery quality and high visual quality sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
- Class V - Applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions, or to areas that have the potential for enhancement. This classification indicates that change is needed. The class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objectives should be identified.
-

Source: After BLM Manual 6310 (U. S. Department of the Interior, Bureau of Land Management, 1975).

APPENDIX 2

VRM CLASS RATINGS

"The purpose of a Visual Resource Management (VRM) Class is to reduce the visual impacts of developed activities and to manage the quality of the visual environment."

VRM classes are determined by combining the ratings from scenic quality classes, visual sensitivity levels, and distance zones. Scenic quality classes are rated for landform, water, color, vegetation, intrusions and uniqueness. These elements are combined and the area is quantified as one of the following classes:

Class A - Unique, outstanding features

Class B - Outstanding features common to the physiographic region

Class C - Features common to the physiographic region

Sensitivity levels are determined by frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and assigned a high, medium or low sensitivity level.

Distance zones are placed in three categories: foreground/middleground zone, background zone, seldom seen zone. The foreground/middleground zone is closer to the view and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are less detailed to the viewer and most impacts blend with the landscape because of the distance viewed from.

Ratings from scenic quality classes, visual sensitivity levels and distance zones are combined to form VRM classes. The VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape. See Appendix 3 for definitions of each VRM class.

APPENDIX 3

PUBLIC RESPONSE SUMMARY

Unit Number: NM-010-22

Unit Name: Cabezon

FAVOR Wilderness Study

I	S
18	18

OPPOSE Wilderness Designation or Wilderness Study Status

I	S
4	9

I S Supporting Reasons

8	8	Meets Naturalness Criterion
8	8	Offers Opportunities for Solitude
7	7	Offers Opportunities for Recreation
3	3	Supplemental Values
1	1	Resource Conflicts
8	8	No Supporting Reasons Offered

I S Supporting Reasons

1	6	Does Not Appear to be Natural
3	3	Resources Conflicts
2	2	Not Manageable as Wilderness

I S FORM LETTERS & PETITIONS

2524	2659	Endorsements of Conservationist Proposal
1	615	Petition Endorsing Conservationist Proposal

I S FORM LETTERS & PETITIONS

SEQUENCE NUMBERS

C015	G018	S047
C016	D014	
K018	K017	
B026	L020	
F014	W033	
L022	H028	
Z003	S035	
C030	S012	
O001	D010	

SEQUENCE NUMBERS

C025
C011
L018
S049

APPENDIX B

WILDERNESS ANALYSIS REPORT

EMPEDRADO WILDERNESS STUDY AREA

NM-010-063
ALBUQUERQUE DISTRICT

RIO PUERCO RESOURCE AREA

EMPEDRADO



SECTION 1

GENERAL DESCRIPTION

LOCATION

The Empedrado Wilderness Study Area (WSA; NM-010-063) contains approximately 9,410 acres of public land, and is located approximately 4 miles northwest of the village of Guadalupe, New Mexico. It is bounded on the north, east and south by maintained roads, and on the west by a combination of maintained roads and property boundaries (refer to Map A and Map B).

The U.S. Geological Survey topographic maps that cover this WSA are Canada Calladita, Cerro Parido, Guadalupe, and Arroyo Empedrado (7.5 minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Empedrado WSA lies near the center of northwest New Mexico. Physiographically, the WSA is contained by the Navajo Section of the Colorado Plateau. The Navajo Section is characterized by outcrops of subhorizontal sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Regional landforms include mesas, cuestras, rock terraces, retreating escarpments, canyons and arroyos.

A little over 500 feet of relief exists in the Empedrado WSA, from a low elevation of close to 6,000 feet in Torreon Wash to 6,552 feet on a mesa top. Major drainages include Arroyo Piedra Lumbre, Arroyo Empedrado, Torreon Wash and Arroyo Chico. The overall geomorphology consists of sandstone hills cut by arroyos.

The Empedrado WSA has a semiarid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic. Winter moisture comes mainly in the form of snow, averaging more than 37 inches. These frontal storms occur between October and May. Summer precipitation comes as violent thunderstorms of high intensity, short duration, and extremely unpredictable rainfall patterns. General rains covering large areas are rare; therefore, certain localized areas may receive adequate moisture while adjacent ones receive none. The average annual precipitation is approximately 11 inches, about 40 percent of which falls in July and August.

The temperature, like the precipitation, is extremely variable from season to season. Extreme temperatures range from 102° F. in the summer to -20° F. in the winter. Average daily temperatures in the warm months vary from 45° F. in April to 70° F. in July.

The average growing season is approximately 160 days, beginning in May and ending in October. This 160-day season is seldom realized because available moisture, rather than the temperature, becomes the limiting factor. More moisture is generally available in July, August and September.

LAND STATUS

The Empedrado WSA is made up of 9,410 acres of public land. 260 acres of private inholdings are located inside this WSA (refer to Map A).

Legend

— WSA BOUNDARY
 - - - AMENDED BOUNDARY
 ||| CONSIDERED FOR SPECIAL DESIGNATION

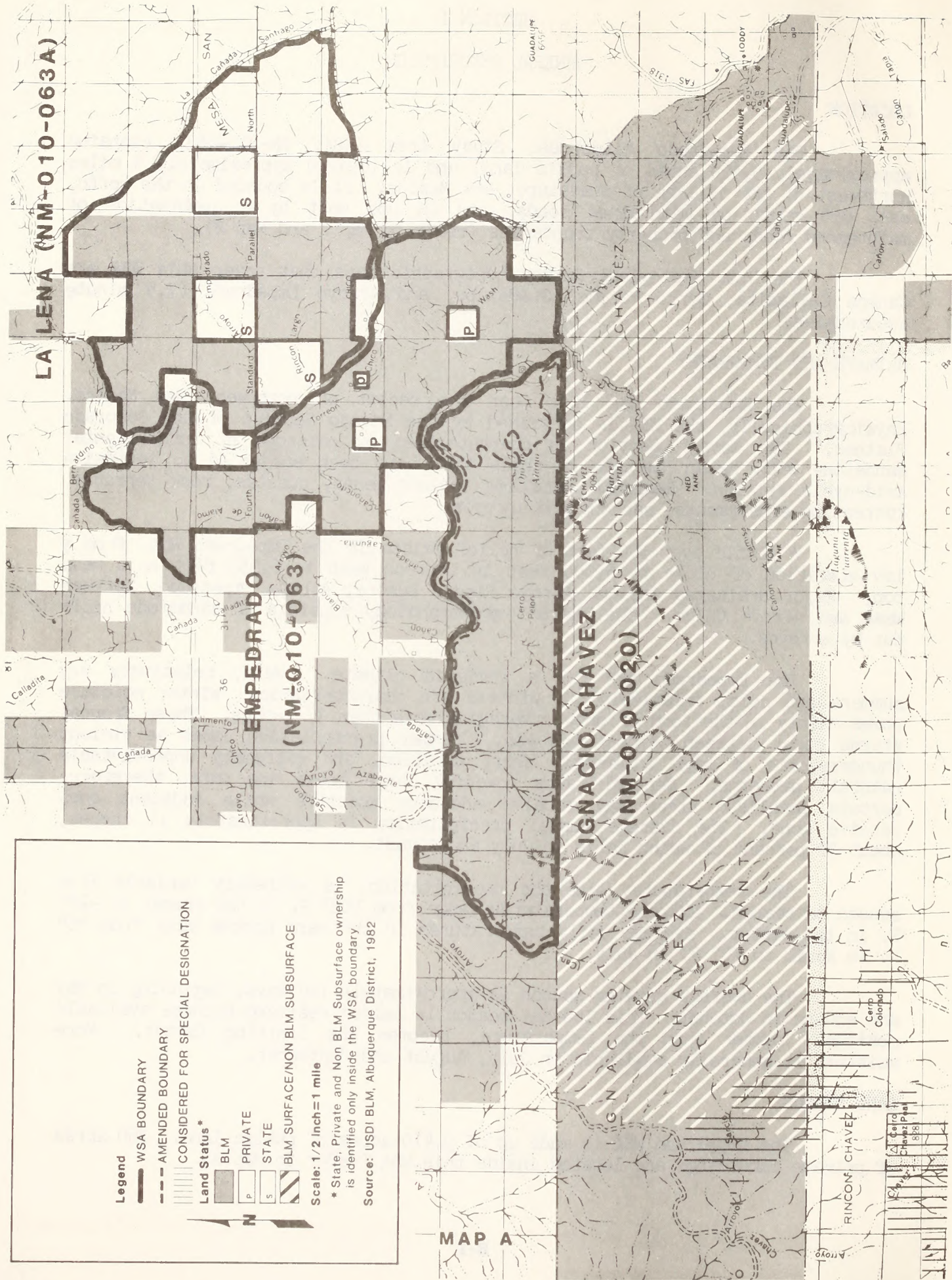
Land Status*

BLM
 P PRIVATE
 S STATE
 BLM SURFACE/NON BLM SUBSURFACE

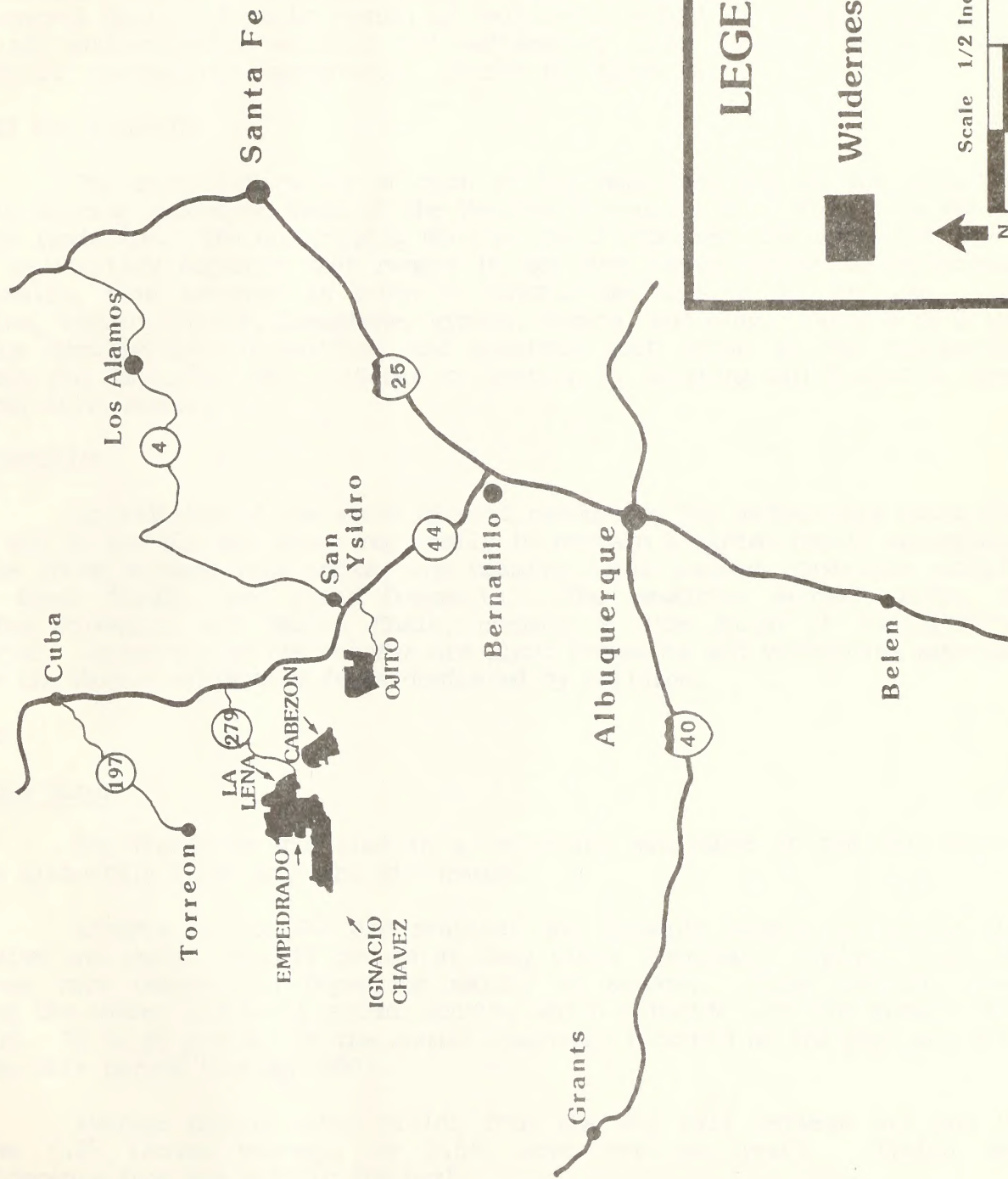
Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary

Source: USDI BLM, Albuquerque District, 1982

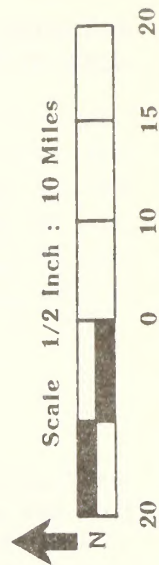


MAP B GENERAL LOCATION



LEGEND

Wilderness Study Area



ACCESS

Access is available proceeding west off of highway 44 onto a state maintained gravelled road. County maintained dirt roads flank the eastern and western boundaries of the Empedrado WSA.

SECTION 2

EXISTING RESOURCES

GEOLOGY

The Empedrado WSA lies in an area of relatively simple structure. There are few faults and only gentle folding which is associated with the termination of the McCartys syncline. Regional dip is at a low angle to the northwest towards the San Juan Basin. The Empedrado WSA is situated on the southwestern margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dip, the subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and spectacular escarpments. (Refer to Figure 1).

ENERGY AND MINERALS

The scenic character of much of the Empedrado WSA is the result of gently dipping sandstone beds of the Menefee Formation which form a cuesta and valley landscape. The outcropping Menefee rocks represent the uppermost layers of a sedimentary sequence that ranges in age from Pennsylvanian to Cretaceous. Regionally, this sequence is known to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humate, and clay. Table 4 is a list of the stratigraphic formations and minerals that occur in the sub-surface beneath the Empedrado WSA. (Refer to Section 3, Existing and Potential Uses; Mineral Development).

PALEONTOLOGY

In addition to the above mineral resources, the sedimentary rocks that crop out in the WSA are known regionally to contain a varied fossil assemblage. Of the three exposed rock units, the massive Point Lookout Sandstone contains only trace fossils and plant fragments. The remaining exposed units, the Menefee Formation and Mancos Shale, contain a wide range of fossiliferous material. Occurring in the Menefee are plant fragments and vertebrate material, while the Mancos exhibits a fauna dominated by molluscs.

WATER

Surface Water

The Empedrado WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande.

Arroyos in the WSA are seasonal and commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout a given year, but volumes vary enormously, depending mainly on season. Peaks commonly occur during the summer and early autumn months, which coincide with the summer rainy season. Up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). Yields vary considerably from one year to the next.

Figure 1

**Stratigraphic Section,
Cabezon, Chamisa, Empedrado,
Ignacio Chavez, La Lena, and Ojito Wilderness Study Areas**

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER	LITHOLOGY
CENOZOIC	QUATERNARY		ALLUVIUM	
	TERTIARY		PEDIMENT	
			SANTA FE	
	CRETACEOUS	MESAVERDE	PICTURED CLIFFS	
			LEWIS	
			CLIFF HOUSE	
			MENEFEE	
			POINT LOOKOUT	
			CREVASSE CANYON	
			GALLUP	
			MANCOS	
			DAKOTA	
			BRUSHY BASIN	
	JURASSIC	SAN RAFAEL	WESTWATER CANYON	
			RECAPTURE	
			BLUFF	
			SUMMERVILLE	
			TODILTO	
MESOZOIC	TRIASSIC	CHINLE FORMATION	ENTRADA	
			UNNAMED SILTSTONE	
			PETRIFIED FOREST	
			POLEO SANDSTONE LENTIL	
			SALITRAL SHALE TONGUE	
	PERMIAN	MAGDA-LENA	AGUA ZARCA	
			SAN ANDRES	
			GLORIETA	
			YESO	
			ABO	
PALEOZOIC	PENNSYLVANIAN	MAGDA-LENA	MADERA	
	MISSISSIPPIAN		SANDIA	
	PRECAMBRIAN		ARROYO PENASCO	
PRI-CAM-BRIAN	PRECAMBRIAN		PRECAMBRIAN	

Before 1979, Arroyo Chico was an intermittent stream running a distance of about 6 kilometers (4 miles). The source of intermittent flow was a combination of discharge from a spring located in a channel bottom in Section 36, T. 17 N., R. 5 W., and input from various other springs in smaller tributary arroyos.

In 1979, a deep underground uranium mine near San Mateo began a dewatering process for its operation. Since then water has been discharged into Arroyo Chico at a constant rate of about 5 to 6 cubic feet per second (2,500 to 3,000 gallons per minute). This water flows from the mine discharge point (which is about 35 stream miles upstream from the gage) past the gaging station and into the Rio Puerco for an undetermined distance downstream (Craig 1980). At the present time, flow conditions in the main channel of Arroyo Chico have changed drastically, and it is now a perennial stream.

Ground Water

The Empedrado WSA lies within the Rio Grande state-declared underground water basin. There are two known springs in the WSA, one of which is undeveloped. There are also three water wells in the area.

SOILS

The major limitations to soil productivity and use of soils in the Empedrado WSA are susceptibility to erosion, the presence of heavy textural soils derived from shale (some with shallow depths to bedrock), and sodium or alkali content. (Refer to Table 1.)

VEGETATION

The Empedrado WSA is a river-bottom site consisting of the channel and banks of Arroyo Chico and Torreon Wash. Arroyo Chico is now a perennial stream (refer to the Water Resources section) supporting riparian habitat. Refer to Table 2 and Map C for further information on the vegetation of this WSA. No threatened or endangered species were noted in the Empedrado WSA.

WILDLIFE

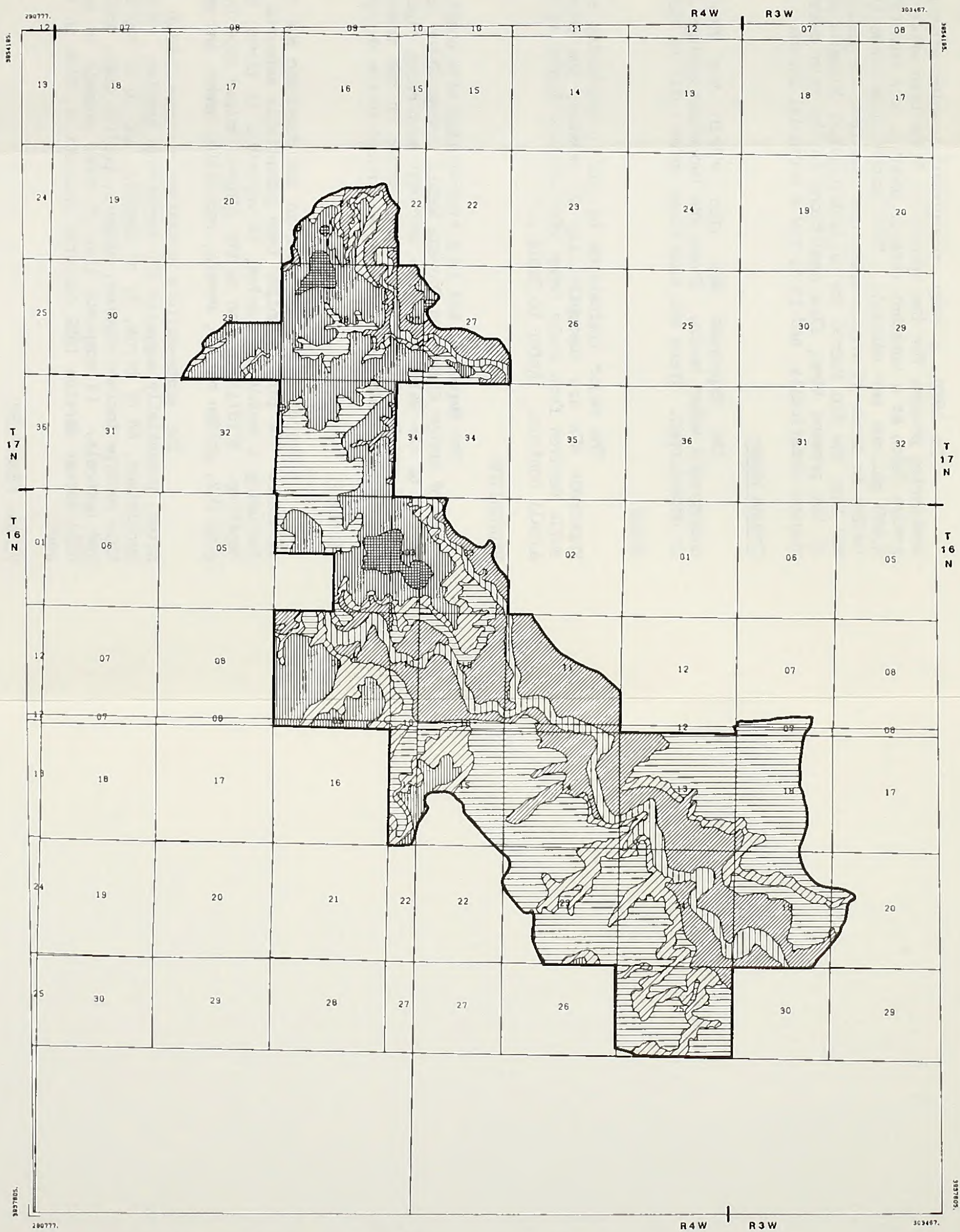
There are two ecotypes in the Empedrado WSA that provide habitat for wildlife. The pinyon-juniper type potentially supports 136 vertebrate species, including 3 amphibian species, 64 varieties of birds, 50 of mammals, and 19 of reptiles. Wildlife common to the pinyon-juniper type in the WSA are mule deer, gray fox, golden eagles, ravens, red-tailed hawks, and great horned owls.

The grama-galleta grassland ecotype (which includes some riparian sites) potentially supports 132 vertebrate species. This includes 7 species of amphibians, 68 of birds, 37 of mammals, and 20 of reptiles. Common animals in this ecotype include coyotes, badgers, prairie dogs, scaled quail, horned larks, and kestrels. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Rio Puerco Resource Area.)

VISUAL RESOURCES

From lava-capped mesa tops, the Empedrado WSA offers views of Cabezón Peak (VRM Class I), Mesa Cortada, Mesa la Azabache, Arroyo Chico, and the many

VEGETATION, EMPEDRADO WSA



EMPEDRVEG POLYCO
EMPEDRVEG POLYCO
EMPEDRVEG POLYCO
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EMPEDRVEG POLYCO
EMPEDRVEG POLYCO
EMPEDLAP POLYCO



BUREAU OF LAND MANAGEMENT

RANGE SITE 1 - 2301 ACRES
RANGE SITE 2 - 160 ACRES
RANGE SITE 3 - 325 ACRES
RANGE SITE 4 - 3960 ACRES
RANGE SITE 5 - 1185 ACRES
RANGE SITE 6 - 2045 ACRES
NM-010-063
SECTIONS



TABLE 1
SOILS, EMPEDRADO WSA

Unit ^{a/}	Soil Type	Percent Slope	Acres
Ak	Alkali alluvial land	-	757
Bc	Basalt Outcrop - Cabezon Association	-	2,860
Bf	Berent - Sandstone Outcrop Association	-	10
Bg	Billings Silty Clay Loam and Gullied Land	-	5
Cg	Christianburg Clay and Gullied Land	-	648
Fs	Fruitland - Slickspot Association	-	108
Lc	Las Lucas loam	0-5	85
Ld	Las Lucas loam	5-9	377
Le	Las Lucas Soils	5-9	242
Lp	Las Lucas - Persayo Association	-	293
Lt	Litle - Las Lucas - Persayo Association	-	347
Pf	Penistaja Pine Sandy loam	0-5	152
Pr	Persayo gravelly soils - Shale Outcrop Association	-	618
Rt	Rock Outcrop - Travesilla - Persayo Association	-	1,841
Sv	Shavano - Berent Association	-	40
Tp	Travesilla - Persayo - Billings Association	-	278

Note: ^{a/} Units correlate to soils map on file in the Rio Puerco Resource Area.

TABLE 2

VEGETATION, EMPERADO WSA

Site Number	Eotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Juniper-pinyon woodland	10	N, S, E, W	25	12.20	poor-fair	One-seed juniper, galleta grass, Bigelow sage	15	550	Black grama, little blue-stem, Indian ricegrass, needle and thread grass	190-Rock Outcrop-silla Complex
2	Grama-galleta steppe	3	Nearly flat	12	33.60	poor-fair	Blue grama, broom snake-weed, alkali sacaton	20	80	Indian rice-grass, blue grama, big sagebrush, true mountain mahogany	010-Trave-silla-Shingle Rock Outcrop Complex
3	Grama-galleta steppe	less than 1	S and E				Narrowleaf cottonwood, Rio Grande cottonwood, Russian olive, salt cedar, NM olive, black greasewood, salt grass, alkali sacaton, western wheatgrass, vine mesquite, sedges, spikebrush, horsetail, rush, reed, cat-tail, bulrush, wolfberry				

TABLE 2 (concluded) Empedrado Vegetation

Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
4	Juniper-pinyon woodland	4	N, S, E, W	26	9.45	fair	Galleta grass, alkali sacaton, one-seed juniper	20	450	Indian rice-grass, bottlebrush squirrel-tail, blue grama, galleta grass	141-Penstajala Bond Association
5	Juniper-pinyon woodland	38	N, S, W	14	26.59	poor	Shadscale, galleta grass, blue grama	10	225-475	Alkali sacaton, sideoats grama, Indian rice-grass, Bigelow sage	011-Trave-silla-Shingle-Eroded Rock Outcrop Complex
6	Grama-galleta steppe	less than 1	N, S, E, W	21	9.85	poor-fair	Alkali sacaton, four-wing salt-bush, black greasewood	25-30	900	Alkali sacaton, giant sacaton, blue grama, vine mesquite, galleta grass	Alkali Alluvial Christian-burg Clay, Gullied land

volcanic plugs that surround Mesa Chivato. Portions of the Cabezon, Ignacio Chavez, Chamisa, and La Lena WSAs can be seen.

Two classification systems quantify visual resources. The BLM's Visual Resource Management (VRM) System (1971) divides the WSA into three management units. The southern half is rated VRM Class II. The northern half is divided into two portions, with its southern portion rated VRM Class III and its northern portion VRM Class IV.

The BLM utilized a Visual Resource Inventory in the Proposed Rio Puerco Livestock Grazing Management System Environmental Statement (1978). The WSA was divided into two classes, with the southern portion being given a scenic quality rating of Class A and the northern portion Class C (refer to Appendix 1 and 2).

CULTURAL RESOURCES

Cultural resource inventory within the Empedrado WSA consists of surveys of approximately 2 sections (1,280 acres) and numerous small (5-acre or less) in-house and energy development-related surveys. This limited survey has identified 24 sites within the WSA boundaries, located generally along and overlooking two major drainages (Torreon Wash and Arroyo Chico) that bisect the WSA. Identified site types include Archaic, Navajo and Historic. Over half of the known sites are unidentified and carried in BLM site inventory files as locations only. High Pueblo site densities recorded for areas just outside this WSA suggest that substantial evidence of prehistoric pueblo occupation exists within this WSA.

No PaleoIndian sites are known within the WSA boundaries or in the surrounding vicinity. Location patterns and probability of occurrence for PaleoIndian sites in this WSA is unknown.

Existing survey has reported only one Archaic site, located above Canada de Las Lomitas on the north side of the WSA, but the probability of Archaic sites within this WSA is high.

Seven Navajo sites are recorded within the WSA, six of which are habitation sites. Little temporal data is available for these Navajo sites (none have been tested). Ethnohistorical information indicates Navajo occupation of the middle Rio Puerco Valley (and the WSA) occurred both before and after the Long Walk Period (1864-1868).

Historic use of the middle Rio Puerco drainage (and therefore the WSA) has been moderately extensive. Spanish settlers entered the valley before the 18th century, and remnants of a Hispanic population remain today. Two historic sites are recorded within the WSA, one being a Historic Spanish structure and the other a Historic trash scatter. Traditional uses included livestock grazing and farming. (Refer to Table 3).

TABLE 3

ARCHAEOLOGICAL SEQUENCE FOR RIO PUERCO RESOURCE AREA
(After Dittert, 1959)

Culture Period	Time	Culture Period	Time
Paleoindian	>250 B.C.	Pueblo II	870-950 A.D.
Archaic	>250 B.C. 700 A.D. (500-700 BMIII)	Pueblo II	950-1100 A.D.
		Pueblo III	1100-1200 A.D.
Basketmaker	700 A.D. 800 A.D.	Pueblo III-IV	1200-1400 A.D.
		Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

AIR QUALITY

Under the Clean Air Act (as amended, 1977), BLM-administered lands were given a Class II air quality rating, which allows moderate deterioration associated with moderate, well-controlled industrial and population growth.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable or salable minerals is occurring within the boundaries of the WSA. As of August 1982, a total of 331 mining claims have been staked within the Empedrado WSA as well as 22 oil and gas leases. No active mines or wells exist within the WSA boundaries, and the level of exploration activity has been low.

Table 4 indicates that the highest potential for development is associated with the coal and humates that occur in the Mesaverde Group. The geologic environment, the inferred geologic processes, the reported mineral occurrences and known mines or deposits indicate a high favorability for the accumulation of these two mineral resources. The completion of a successful exploration program could lead to the development of a moderate-sized coal strip mine in the northern half of the WSA. All of the other commodities have only a low to moderate potential for development.

WATERSHED

Arroyo Chico, which is part of the Rio Puerco, drains the Empedrado WSA. The Rio Puerco watershed is one of the major tributaries of the Rio Grande, embracing approximately a third of the drainage that lies in New Mexico above the Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth of the waters of the Rio Grande (6 percent), yet it is the source of over half (56 percent) of the sediment that obstructs the main Rio Grande channel (Waite 1972). The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by cattle and sheep overgrazing in the late 1800's and early 1900's. The average rate of erosion for the WSA is moderate.

LIVESTOCK GRAZING

Located in this WSA are five grazing allotments. (Refer to Map D). All of these allotments have acreage in other WSAs. Table 5 displays grazing information pertaining to these five allotments.

TABLE 4
MINERAL RESOURCE ASSESSMENT, EMPEDRADO WSA

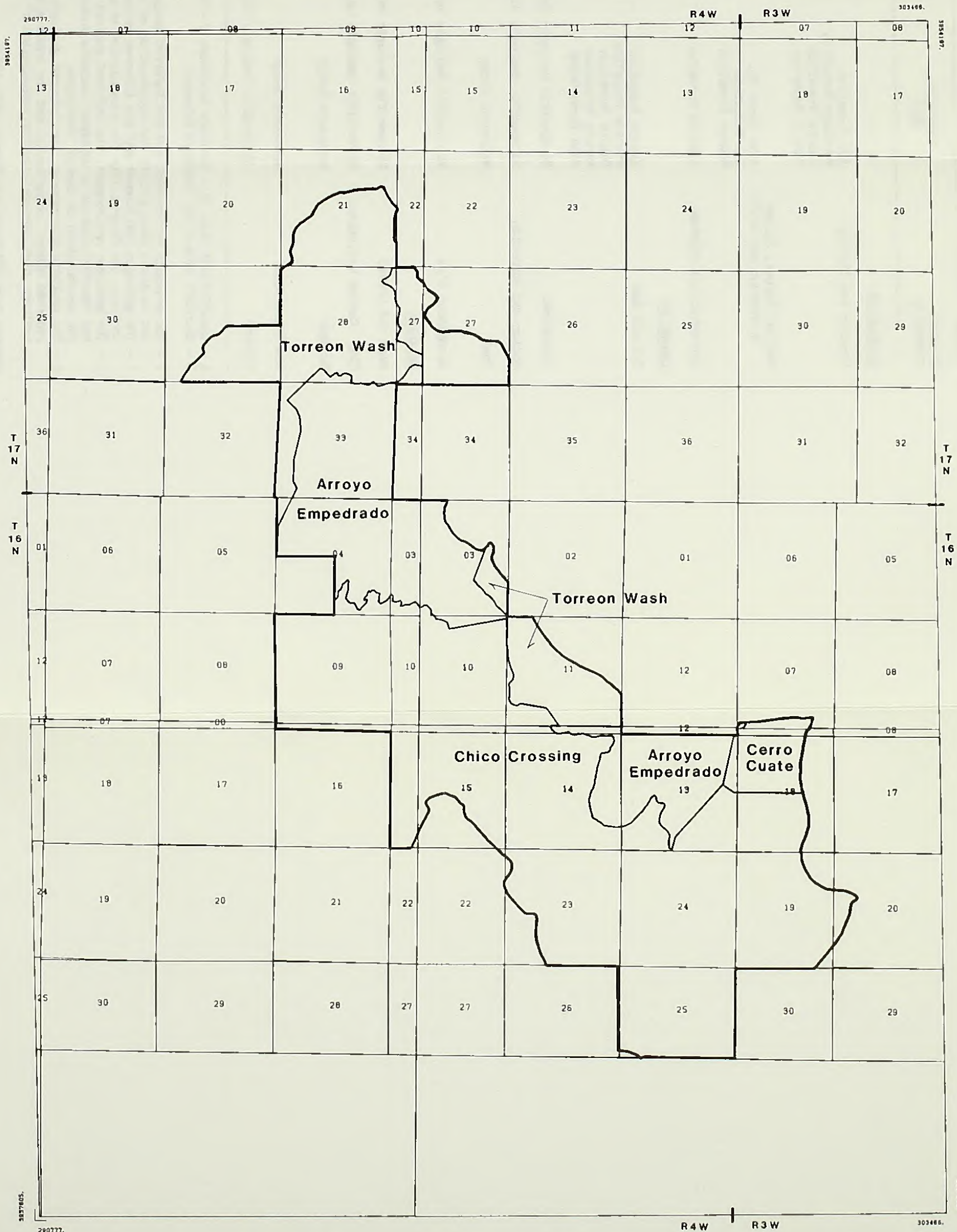
Mineral Commodity	Geologic Unit	Development Potential
<u>Locatables</u>		
Uranium and Thorium	Abo Formation	---
	Morrison Formation	3-B
	Dakota Formation	---
	Mancos Formation	---
Metals (Copper, Silver Molybdenum and Gold)	Agua Zarca Mb.	2-B
	Abo Formation	2-B
	Madera Formation	2-B
Non-metallics (Gypsum)	Tbdilto Formation	3-A
<u>Leasables</u>		
Oil and Gas	Sandia Formation	3-C
	Entrada Formation	3-C
	Dakota Formation	3-C
	Mancos Formation	3-C
	Mesa Verde Group	3-C
Geothermal	No Specific Geologic Unit	1-A
Sodium and Potassium	No Specific Geologic Unit	2-A
Coal	Mesaverde Group	4-B, NW 1/3
		2-B, SE 2/3
Bituminous Rock	No Specific Geologic Unit	2-C
<u>Salables</u>		
Sand and Gravel	No Specific Geologic Unit	2-B
Clay (Common Varieties)	No Specific Geologic Unit	3-A
Humates	Mesaverde Group	4-B, NW 1/3
		2-B, SE 2/3
Petrified Wood	Mesaverde Group	2-A
Cinders	No Specific Geologic Unit	2-B

A - Insufficient Data; B - Indirect Evidence; C - Direct Evidence
D - Abundant Direct and Indirect Evidence

- 1 - The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.
- 2 - The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.
- 3 - The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.
- 4 - The geologic environment, the inferred geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

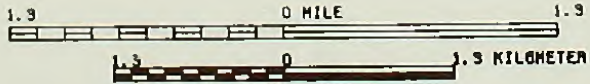
Adapted from GEM Study and Turner, BLM, 1982.

RANGE ALLOTMENTS, EMPEDRADO WSA



EMPEDLAP
1RPEMPEOR
RPHSA

POLYCO
POLYCO
POLYCO



SECTIONS
ALLOTMENTS
NM-010-063



BUREAU OF LAND MANAGEMENT

TABLE 5

LIVESTOCK GRAZING INFORMATION, EMPEDRADO WSA

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Chico Crossing	0043	15,339	5,057	2	170 head	Yearlong
Torreon Wash	0035	7,976	1,583	1	88 head	Yearlong
Arroyo Empedrado	0036	4,536	2,609	2	59 head	Yearlong
Cerro Cuate	0041	3,886	258	1	58 head	Yearlong

Chico Crossing Allotment (#0043)

All of the improvements needed to implement the Allotment Management Plan (AMP) for this allotment are water developments. Of these, two water troughs and approximately 3/4 mile of pipeline will be needed to ensure that permanent water is available in each pasture. Without these waters, the proposed grazing system will be ineffective.

Torreon Wash Allotment (#0035)

Three of the five pastures in this allotment contain acres belonging to the Empedrado WSA. These three pastures are grazed by livestock for 7 months each year. No range improvements to be constructed in the Empedrado WSA are needed to implement the AMP.

Arroyo Empedrado Allotment (#0036)

All three pastures in this allotment have acreage in the Empedrado WSA. To implement the AMP, approximately 1 mile of drift fence along the west bank of the Torreon Wash and a livestock water with approximately 1/2 mile of pipeline need to be developed within the WSA.

Cerro Cuate Allotment (#0041)

All range improvements needed to implement the AMP are in place.

FOREST PRODUCTS

Pinyon-juniper woodland is the dominant forest type in the WSA. This woodland type is of no commercial value and of little fuelwood value because of its low stand density.

RECREATION

The BLM has no visitor use data for this WSA. The primary recreation use is believed to be some big game hunting and its associated activities -- camping, ORV use, and hiking. Letters received by the BLM show that scenic and geological sightseeing also occur in this WSA, particularly in the southern third of the WSA. The Continental Divide is presently proposed to pass through the southern portion of the Empedrado WSA.

The BLM's 1971 Unit Resource Analysis utilized the Recreation Information System (RIS) to describe the existing recreation environment. The RIS is an evaluation that rates the quality of experience a visitor can expect while participating in a specific activity. The WSA lies within the Chico Arroyo RIS unit. Table 6 describes the key factors for each activity evaluated and its quality rating.

TABLE 6
RECREATION QUALITY EVALUATION, EMPEDRADO WSA

Activity	Quality Rating in Chico Arroyo Unit	Key Factors
ORV use	High	Soil, size, hazards, usability
Sightseeing (Scenery)	Medium	Landform, color, water, vegetation, uniqueness, intrusions
Primitive Values	Low	Scenic qualities, size, intrusions, wildlife, fisheries, water usability, uniqueness

EDUCATION AND RESEARCH

Educational-interpretive potential exists in the Empedrado WSA in the form of a "living laboratory" for the observation and study of natural systems. These values are concentrated in the south 1/3 of the WSA, and include several cultural sites as well as the riparian habitat located along Arroyo Chico.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the Empedrado WSA and continue some use today for firewood gathering and hunting. Recent survey near the WSA and interviews with officials of the Jemez, Zia, and Santa Ana Pueblos and the Canyoncito Navajo Reservation generally show that many places of religious significance

exist in or near the Empedrado WSA, but that specific site locations are not known to the lay members of the tribes. Tribal elders know of and watch over such sites, and it would apparently be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional uses of this WSA will probably continue.

WILDLIFE

The Empedrado WSA is within the Upper Rio Puerco Wildlife Habitat Management Plan (HMP) area. The HMP proposes the construction of several exclosure fences with wildlife watering devices in the WSA (USDI, BLM 1981). The objective is to provide small plots with water, cover, and forage for small animals such as quail, rabbits, and songbirds.

The southern portion of the WSA is used as winter range for deer from the Mesa Chivato. A small yearlong deer population is present.

Consumptive use of wildlife in the WSA includes some deer hunting, small game hunting, and trapping (primarily for coyotes). Non-consumptive use includes observation of wildlife incidental to sightseeing.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

The basic wilderness characteristics of the Empedrado WSA have been documented in the process of designating it as a Wilderness Study Area (USDI, BLM, 1980). The following discussion elaborates on the quality of these characteristics.

Naturalness

The Empedrado WSA is sparsely impacted by the actions of man, and all existing intrusions are well-buffered by their surrounding vegetation and/or topography. No single impact has an excessive visual impact from a north, south, east, or west viewscape. When viewing the Empedrado WSA as a whole, it generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable (USDI, BLM, 1980).

The human imprints in the Empedrado WSA include a fenceline network, a spring development, 9 earthen dams, a pipe, 3 abandoned drillpads, a painted rock, 7 shotholes, and 31 routes. All are described in the Wilderness Intensive Inventory (USDI, BLM 1980), which also includes a discussion on the relative impacts of the individual intrusion on naturalness and, in some cases, the rehabilitation potential of individual intrusions.

Solitude

The BLM considers solitude as the state of being alone or removed from habitations; isolation. The broken terrain of the Empedrado WSA, including the mesa, rolling grasslands, and arroyos and washes, combined with the pinyon-juniper cover in the northwestern portion of the WSA, buffers user groups from each other and thus provides opportunities for solitude. The narrow land pattern dominating the northern two-thirds of the WSA limits the opportunities to experience solitude. Low levels of visitor use concentrated in this portion could be tolerated and still provide the experience of solitude.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality.

Empedrado contains some opportunities for hunting and sightseeing, but the overall quality of primitive opportunities has been rated low, as displayed in Table 6, Recreation Quality Evaluation.

Special Features

The Empedrado WSA has special cultural, scenic, wildlife and vegetation features concentrated in the southern 1/3 of the WSA. Although wildlife is not abundant, a good diversity of species is present. This is

complemented by the riparian vegetation along the Arroyo Chico. Several cultural sites have been noted, including petroglyphs. Expansive viewsapes are available for sightseeing. (Refer to Section I, Existing Resources, Visual.)

Multiple Resource Benefits

The Empedrado WSA contains many natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM. A more detailed discussion of the multiple resource benefits of wilderness designation may be found below in Section 6 under the discussion of the impacts of the All Wilderness Alternative.

Diversity In The National Wilderness Preservation System

Ecosystems Present

The Empedrado WSA, according to Robert G. Bailey (1980), falls under the Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This Sub-Province can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic. (Refer to Table 2 - Vegetation, located in Section 2, Existing Resources).

The two A.W. Kuchler types (1964) found in the WSA are described as follows:

Gramma-Galleta Steppe

Total acres in WSA 2,263; 24 percent of WSA.

Juniper-Pinyon Woodland

Total acres in WSA 7,146; 76 percent of the WSA.

Map E displays these ecosystems. Vegetation Map C, breaks each ecosystem into more refined site categories which are narrated in Table 2 (Vegetation, Empedrado WSA) located in Section 2, Existing Resources; Vegetation).

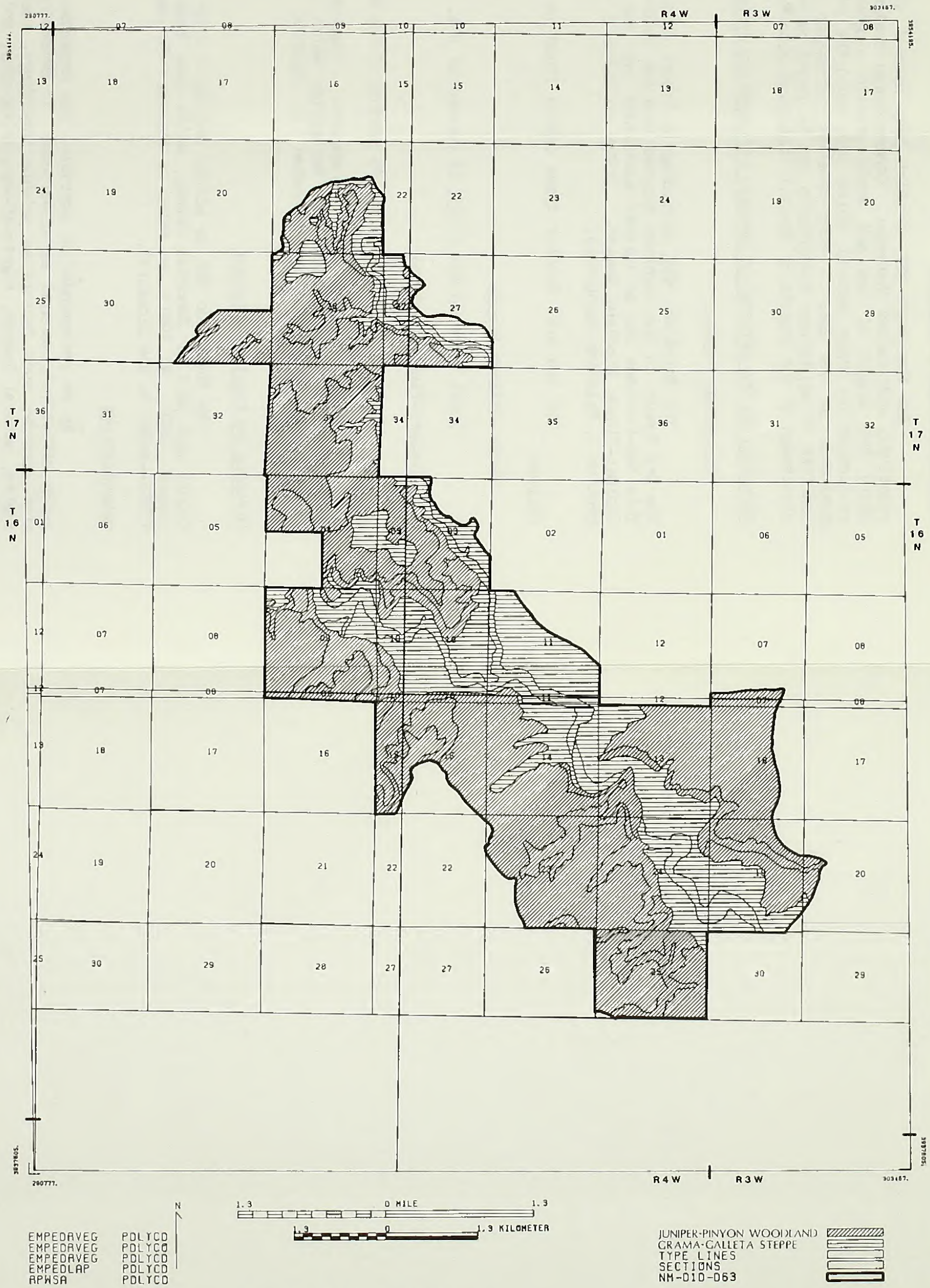
Distance to Population Center

The Empedrado WSA is within one day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census (USDC, BC 1981) as being a Standard Metropolitan Statistical Area (SMSA--refer to the Glossary).

MANAGEABILITY

To be recommended as suitable, the Empedrado WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall land status pattern.

ECOTYPES, EMPEDRADO WSA



BUREAU OF LAND MANAGEMENT

Valid existing rights in the Empedrado WSA are accorded the livestock operations and include necessary access for ranch operations and the maintenance of "grandfathered" range improvements. Reasonable access is also guaranteed to state inholdings. Based on present use, these access needs would result in the occurrence of generally low levels of use incompatible with wilderness.

The configuration of the northern two-thirds of the Empedrado WSA does not lend itself to effective management. The WSA is intensely narrow, and flanked primarily by state and private land. A quarter-section of private land further breaks up the contiguous pattern. The southern two-thirds contains a quarter-section of private land, but is organized in a much more manageable land pattern. It is surrounded primarily by public land. However, this more manageable portion of Empedrado WSA is less than 5,000 acres in size (refer to Map A).

SECTION 5

PUBLIC INVOLVEMENT OVERVIEW

This report has been prepared after considerable public input obtained by a variety of means including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Those people supporting WSA status for Empedrado cited its natural character, opportunities for solitude and primitive and unconfined recreation. Cultural and visual supplemental values were also noted.

Opponents of WSA designation discussed the effects of excluding the Empedrado WSA from possible future mineral exploration and development, the presence of human impacts, and possible limitations placed on ranch operations. (Refer to the public response summary for the wilderness intensive inventory, located in Appendix 3.)

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the Empedrado WSA: the All Wilderness Alternative, No Wilderness Alternative (amend the existing land use plan), and the No Action Alternative (manage under the existing land use plan).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 9,410 acres of public land within the Empedrado WSA would be recommended as suitable for wilderness designation. If the WSA was designated as wilderness, existing and potential uses (refer to Section 3) would be regulated by the BLM's Wilderness Management Policy (USDI, BLM 1981).

The All Wilderness Alternative would not have significant impacts on air quality and realty actions in the Empedrado WSA. For this reason, these resources are not included in the following discussions.

Impacts to Minerals

Locatable mineral development within the Empedrado WSA would be affected by wilderness designation because mining claims could not be located after January 1, 1984, and operations conducted after December 31, 1983, may include only development work, extraction and patenting.

Discretionary leasing and mineral materials sales would most probably cease following wilderness designation; only those leases in effect prior to designation would be allowed to continue. As of January 1, 1984, all of the minerals under lands designated as wilderness will be withdrawn from disposition under all laws pertaining to mineral leasing.

The net effect of these restrictions would be to significantly lower the potential for development of all locatable and leasable mineral commodities that may occur within the Empedrado WSA. Although there is at least a moderate favorability for the occurrence of copper, silver, uranium, thorium, gypsum, bituminous rock, sand, gravel, clay, humates and petrified wood, wilderness designation would curtail exploration and prevent possible future extraction.

Given today's economic conditions, there is little demand for the extraction of copper, silver, uranium, thorium, bituminous rock, molybdenum, gold or clay, from the Empedrado WSA's reserves.

Although gypsum, sand, gravel and humates occur throughout northern New Mexico, any of these resources located in the Empedrado WSA would be considered economically attractive, regionally. This occurs because extraction near the source of utilization is essential to achieving an acceptable profit margin. Assuming favorable economic conditions, a moderately-sized coal mine could be developed. This option would be precluded by wilderness designation.

If the Empedrado WSA is recommended suitable for wilderness designation, additional surveys will be done by the United States Geologic Survey (USGS) and the Bureau of Mines (BM).

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

Restrictions on surface-disturbing and mechanized activities would provide long-term protection for watershed, soils, and vegetation.

Wildlife

Restrictions on surface-disturbing activities and mechanized activities would provide protection for wildlife habitat. However, restraints on methods of animal damage control and the construction of fence enclosures could occur. Water development associated with the proposed pipeline would most likely not occur, which could preclude the expansion of the existing wildlife resource. (Refer to Section 3, Existing and Potential Uses.)

Visual Resources

The Empedrado WSA's outstanding visual resources would be protected. Minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted.

Cultural

Site condition monitoring associated with surveillance could prove beneficial because 80 percent of the Rio Puerco Resource Area's known sites suffer from significant natural deterioration. Enhanced monitoring would increase the ability to detect, and if warranted, to arrest serious deterioration at relatively early stages.

Potential conflicts exist between cultural resources management and the wilderness management policy which allows the natural decay of sites. Excavation and stabilization may be permitted on a case-by-case basis where the project will not degrade the overall wilderness character and when such activity is needed to preserve the particular cultural resource. If these activities are disallowed on some sites, they may deteriorate.

The increased public awareness of wilderness, and thus potential increased visitation, could increase vandalism if proper visitor management tools are not employed.

Limited-surface disturbing activities would be allowed under wilderness designation. This could limit the destruction of cultural sites through other than natural causes.

Livestock Grazing

The WSA supports approximately 1,340 AUMs; this existing level of livestock operations, as well as necessary vehicular access and the maintenance of "grandfathered" range improvements, are valid existing rights that would continue under wilderness designation.

Livestock operations in the Empedrado WSA would be affected to some degree by wilderness designation. These effects may result from limitations imposed on the maintenance of existing range improvements and the construction of some proposed range improvements. Although grazing is permissible and a compatible activity with wilderness, limitations on the type of construction materials or location of improvements may occur in order to protect wilderness characteristics. The pipeline system planned within the Empedrado WSA would not likely be constructed. The federal government would not spend approximately \$11,000 putting in the pipeline, and the allottees would not be responsible for approximately \$1,416 of annual maintenance.

A major impact to those allottees holding grazing leases within Empedrado WSA could be the limitations put on the use of motorized vehicles in designated wilderness areas. Most of the ranchers holding leases in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. Most of them live in Albuquerque or Bernalillo near their jobs and primary sources of income. Therefore, the weekends are the time when most of them can attend to their grazing allotments, and the pickup truck has partially replaced the horse as a major livestock management tool. Wilderness designation could hinder the effective use of already limited time to tend to weekend ranching operations.

Forest Products

It is assumed that increased management attention (such as regular patrol) would occur under wilderness designation which could curtail illegal woodcutting.

Recreation

Recreation activities that require motorized vehicles would be curtailed, including some hunting and motorcycle activity; wilderness designation would ensure the present opportunities for sightseeing, photography and hiking continue. Although these opportunities do exist outside the WSA, Empedrado provides the natural setting in the southern 1/3 of the WSA on which the existing recreation opportunities are dependent.

Education/Research

Wilderness designation would ensure the preservation of the "natural laboratory" in the Empedrado WSA. (Refer to Section 3, Existing and Potential Uses).

Native American Uses

The limitations on vehicular access could alter current Native American uses. However, the preservation of solitude and naturalness could enhance these activities because they are often dependent on a natural setting.

NO WILDERNESS ALTERNATIVE

Under the No Wilderness Alternative, (but amend the existing plan) the Empedrado WSA would be recommended as nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses would

continue (refer to Section 3) without regard for the Interim Management Policy and Guidelines for Lands under Wilderness Review (USDI, BLM, 1979a).

Under this alternative, approximately the southern one-third of the Empedrado WSA (3,443 acres) would be placed under protective status. (Refer to Map A). This management condition, subject to valid and existing rights, would be designed to protect the concentration of sensitive visual resources located in the WSA by designating it VRM Class II. Changes in any of the basic elements (form, line, color or texture) caused by a management activity would not be evident in the characteristic landscape.

No other protective designation has been proposed for the Empedrado WSA. The most probable uses of the WSA if it is not designated as wilderness would be continued livestock grazing, possible mineral exploration and development, and ORV use.

The No Wilderness Alternative would not have a significant impact on air quality, realty actions, livestock grazing, minerals or forest products. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

The Empedrado WSA's cultural, scenics, wildlife and special features, as well as its opportunities to experience solitude and primitive and unconfined recreation are concentrated in the southern portion of the Empedrado WSA. Their preservation is strongly linked to the preservation of the Empedrado WSA's visual resources, which would be maintained under the No Wilderness Alternative. The remainder of the WSA would be subject to surface disturbing activities which would impair the naturalness of the region.

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

Impacts would be the same as stated in the All Wilderness Alternative, for the southern 1/3 of the WSA. The northern portion would be vulnerable to greater degrees of surface-disturbing activities.

Wildlife

The No Wilderness Alternative could aid in the protection of the sensitive riparian habitat located along Arroyo Chico. However, the No Wilderness Alternative could result in a significant increase in human activity in the remainder of the WSA and thus, impact those species dependent on an unmodified ecosystem.

Visual Resources

The visual resources located in the southern portion of the Empedrado WSA are an integral component of the viewshed for regions to the west, south and east, and would be protected under this alternative.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Recreation

The No Wilderness Alternative would protect the sightseeing and photographic opportunities concentrated in the Empedrado WSA's southern regions. Recreation relying on vehicular travel as well as motorcycle use would continue.

Education and Research

The Empedrado WSA's undisturbed environment, which is the basis of its ability to provide a "living laboratory" in which to study natural systems, would be subject to increased surface disturbing activity. This would be mitigated to a degree, by VRM Class II management.

Native American Uses

Depending on the location, the No Wilderness Alternatives could result in the destruction of Native American use sites. The degree of impact cannot be assessed without further information from local tribes.

NO ACTION ALTERNATIVE

"No Action" means that the Empedrado WSA would be managed as undesignated multiple use land. The most probable uses of the Empedrado WSA if it is not designated as wilderness would be livestock grazing, mineral exploration, and ORV use. Management actions calling for varying degrees of vegetative manipulation, water pipeline development and rangeland improvements have been identified by the wildlife and range programs. Empedrado WSA's wilderness characteristics would be subject to increased pressure for mineral exploration and development. (Refer to Section 3, Existing and Potential Uses).

Under the no action alternative the Empedrado WSA would be recommended nonsuitable for wilderness designation. Existing and potential uses would continue without regard for the Interim Management Policy and Guidelines for Lands Under Wilderness Review (1979).

The No Action Alternative would not have significant impacts on forest products, air quality, realty actions, range or minerals. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

Mineral exploration and development, rangeland improvements, increased ORV activity and increased use of motorized vehicles would result in disruption of wildlife habitat, scenery, and vegetation as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to significantly impact naturalness. The fragile resources discussed previously (refer to Section 4, Wilderness Criteria;

Special Features) would be particularly vulnerable to development-oriented management.

To date, no protective designation has been proposed for the Empedrado WSA. The cumulative effect of this lack of a protective designation and the above management practices would be to degrade or eliminate the Empedrado WSA's wilderness characteristics.

Impacts to Other Resources and Uses

Soils, Watershed, Vegetation

Continued vehicular access and other surface disturbing activities could result in additional ruts and create the potential for reduced watershed quality. This occurrence would also affect soils and vegetation.

Wildlife

Non-wilderness management could result in a significant increases in human activity and thus impact those wildlife species dependent on an unmodified ecosystem. However, a wider range of habitat management actions could occur under this alternative and in the long run, produce a more diverse habitat for wildlife. The No Wilderness Alternative would allow the full implementation of the Rio Puerco Habitat Management Plan by allowing the planned water pipeline and related facilities to be constructed.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Recreation

Opportunities for primitive recreation would be reduced as discussed under "Impacts to Wilderness Values" above. Primitive and unconfined recreation relies on the resource base of a predominately natural environment. Such as environment would no exist under development-oriented management.

Recreation relying on vehicular travel as well as motorcross use, would continue.

Education and Research

The natural setting supporting the special features discussed in Section 4, Wilderness Criteria, would be subject to increased surface disturbance and vehicular travel. This would considerably degrade the Empedrado WSA's potential for use as a "living laboratory". (Refer to Section 3, Existing and Potential Uses, Education and Research).

Native American Uses

The natural settings on which those uses are often dependent, would be subject to surface disturbing activities.

SECTION 7

RECOMMENDED ACTION

RECOMMENDED ACTION DESCRIPTION

It is recommended that the Empedrado WSA be considered unsuitable for wilderness designation, and the No Wilderness Alternative (amend the existing plan) be selected. This would classify 3,443 acres of Empedrado as VRM Class II.

RATIONALE

Empedrado WSA wilderness characteristics are concentrated in the southern 1/3 of the unit. Of particular significance are its visual resources, which are an integral part of the viewshed within the region, and the basis for the Empedrado WSA's outstanding sightseeing and photographic potential.

These values would be adequately protected under the management prescribed in the No Wilderness Alternative (amend the existing plan). Any wilderness values which would be foregone, are not significant enough to offset those commodities which would be foregone by wilderness designation. These includes 1 1/4 miles of planned water pipeline and stock facilities; the development of several wildlife waters; the development of possible gypsum, sand, gravel and humate resources for regional demand; curtailment of any vehicular travel; potential for the development of a small coal mine.

CONSISTENCY WITH OTHER PLANS

There are no known inconsistencies with the recommended action and the policies of local, state, or federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Wilderness Draft Environmental Assessment.

CRITERIA FOR VISUAL RESOURCE MANAGEMENT CLASSES

-
- Class I - Applies only to classified special areas, e.g., roadless, wilderness, primitive, natural areas, etc. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
- Class II - Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.
- Class III - Landscapes with Class B scenery quality and high visual sensitivity in the background visual zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground visual zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- Class IV - Landscapes with Class B scenery quality and high visual quality sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
- Class V - Applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions, or to areas that have the potential for enhancement. This classification indicates that change is needed. The class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objectives should be identified.
-

Source: After BLM Manual 6310 (U. S. Department of the Interior, Bureau of Land Management, 1975).

VRM CLASS RATINGS

"The purpose of a Visual Resource Management (VRM) Class is to reduce the visual impacts of developed activities and to manage the quality of the visual environment."

VRM classes are determined by combining the ratings from scenic quality classes, visual sensitivity levels, and distance zones. Scenic quality classes are rated for landform, water, color, vegetation, intrusions and uniqueness. These elements are combined and the area is quantified as one of the following classes:

Class A - Unique, outstanding features

Class B - Outstanding features common to the physiographic region

Class C - Features common to the physiographic region

Sensitivity levels are determined by frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and assigned a high, medium or low sensitivity level.

Distance zones are place in three categories: foreground/middleground zone, background zone, seldom seen zone. The foreground/middleground zone is closer to the view and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are less detailed to the viewer and most impacts blend with the landscape because of the distance viewed from.

Ratings from scenic quality classes, visual sensitivity levels and distance zones are combined to form VRM classes. The VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape. See Appendix 3 for definitions of each VRM class.

APPENDIX 3

PUBLIC RESPONSE SUMMARY

Unit Number: NM-010-63

Unit Name: Empedrado

FAVOR Wilderness Study

I S
10 10

OPPOSE Wilderness Designation or Wilderness Study Status

I S
4 9

I	S	Supporting Reasons
3	3	Meets Naturalness Criterion
3	3	Offers Opportunities for Solitude
3	3	Offers Opportunities for Recreation
1	1	Manageable as Wilderness
7	7	No Supporting Reasons Offered

I	S	Supporting Reasons
1	6	Does Not Appear to Be Natural
1	1	Range Impacts
1	1	Resource Conflicts
1	1	Not Manageable as Wilderness
1	1	No Supporting Reasons Offered

I S FORM LETTERS & PETITIONS

2524	2659	Endorsements of Conservationist Proposal
1	615	Petition Endorsing Conservationist Proposal

I S FORM LETTERS & PETITIONS

SEQUENCE NUMBERS

C015	W030
K018	H028
F014	S035
F022	D010
K017	S047
L020	

SEQUENCE NUMBERS

M025
C025
C011
0001

APPENDIX C

WILDERNESS ANALYSIS REPORT

LA LENA WILDERNESS STUDY AREA

NM-010-063A
ALBUQUERQUE DISTRICT

RIO PUERCO RESOURCE AREA



SECTION 1

GENERAL DESCRIPTION

LOCATION

The La Lena Wilderness Study Area (WSA; NM-010-063(a)) contains approximately 10,310 acres of public land, and is located approximately 7 miles north of the village of Guadalupe, New Mexico. It is bordered on the east side by maintained roads and on the south, north and west by a combination of maintained roads and property boundaries (refer to Map A and Map B).

The U.S. Geological Survey Topographic map that covers this WSA is Arroyo Empedrado (7.5 minute quadrangle).

CLIMATE AND TOPOGRAPHY

The La Lena WSA lies at the approximate center of northwestern New Mexico. Physiographically, the WSA is in the Navajo section of the Colorado Plateau. The Navajo section is characterized by outcrops of sub-horizontal sandstone with lesser amounts of shale which have been subjected to intensive arid-cycle erosion. Land forms in this region include mesas, cuestras, rock terraces, retreating escarpments, canyons, and arroyos. There is approximately 400 feet of relief in the La Lena WSA. From a low elevation of 6,100 feet, the terrain reaches up to 6,500 feet. The major drainage found in the WSA are Arroyo Empedrado and La Canada de La Lena.

The overall geomorphology of the WSA is formed by arroyos cutting sandstoned-capped mesas.

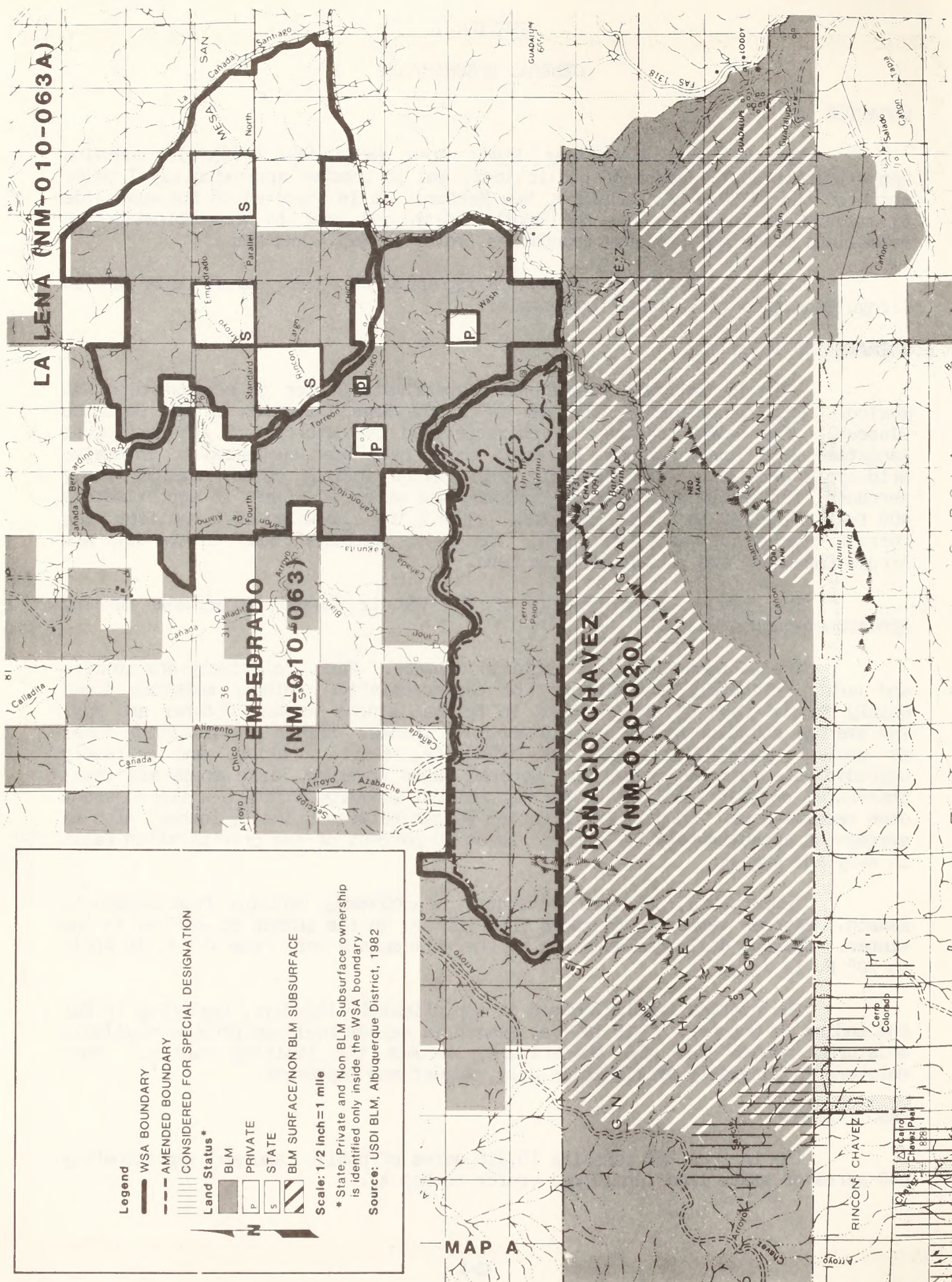
The La Lena WSA has a semiarid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic. Winter moisture comes mainly in the form of snow, coming in frontal storms between October and May. The average snowfall in the area is about 37 inches. Summer precipitation comes as violent thunderstorms of high intensity, short duration, and extremely unpredictable rainfall patterns. General rains covering large areas are rare; therefore, certain localized areas may receive adequate moisture while adjacent ones receive none. Annual precipitation ranges between 5 and 15 inches, with an average of approximately 11 inches. About 40 percent of the precipitation falls in July and August.

Temperature, like precipitation, is extremely variable from season to season. Extreme temperatures range from 102° F. in the summer to -20° F. in the winter. Average daily temperatures in the warm months vary from 45° F. in April to 70° F. in July.

The average growing season is approximately 160 days, beginning in May and ending in October. This 160-day season is seldom realized because available moisture, rather than the temperature, becomes the limiting factor. More moisture is generally available in July, August and September.

LAND STATUS

The La Lena WSA contains 10,310 acres of public land and approximately 640 acres of state land inholdings (refer to Map A).



Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- CONSIDERED FOR SPECIAL DESIGNATION

Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

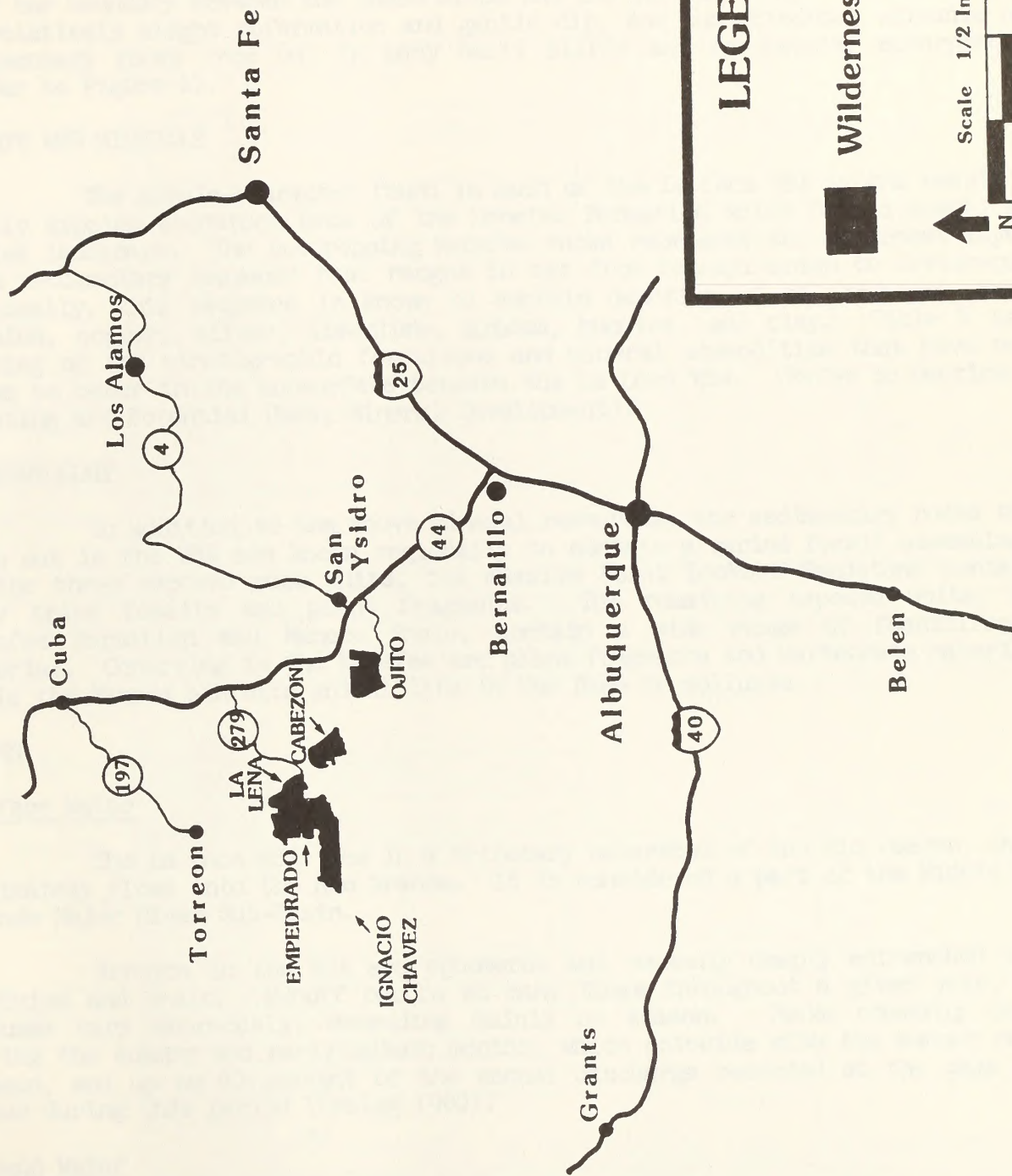
Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982

MAP A

MAP B GENERAL LOCATION



ACCESS

Access to the La Lena WSA is available off of state highway 44. A state maintained gravelled road proceeds west to the WSA. County maintained dirt roads constitute parts of the boundary of La Lena WSA. (Refer to Map A and Map B).

SECTION 2

EXISTING RESOURCES

GEOLOGY

La Lena lies in an area of relatively simple structure. There are few faults and only gentle folding which is associated with the termination of the McCartys syncline. Regional dip is at a low angle to the northwest towards the San Juan Basin. La Lena is situated on the southwestern margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dip, the subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and spectacular escarpments. (Refer to Figure 1).

ENERGY AND MINERALS

The scenic character found in much of the La Lena WSA is the result of gently dipping sandstone beds of the Menefee Formation which form a cuesta and valley landscape. The outcropping Menefee rocks represent the uppermost layers of a sedimentary sequence that ranges in age from Pennsylvanian to Cretaceous. Regionally, this sequence is known to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humates, and clay. Table 4 is a listing of the stratigraphic formations and mineral commodities that have been shown to occur in the subsurface beneath the La Lena WSA. (Refer to Section 3, Existing and Potential Uses; Mineral Development).

PALEONTOLOGY

In addition to the above mineral resources, the sedimentary rocks that crop out in the WSA are known regionally to contain a varied fossil assemblage. Of the three exposed rock units, the massive Point Lookout Sandstone contains only trace fossils and plant fragments. The remaining exposed units, the Menefee Formation and Mancos Shale, contain a wide range of fossiliferous material. Occurring in the Menefee are plant fragments and vertebrate material, while the Mancos exhibits animal life in the form of molluscs.

WATER

Surface Water

The La Lena WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande. It is considered a part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral and commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout a given year, but volumes vary enormously, depending mainly on season. Peaks commonly occur during the summer and early autumn months, which coincide with the summer rainy season, and up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

Ground Water

The La Lena WSA lies within the Rio Grande state-declared underground water basin. One known undeveloped spring is located in the WSA.

Figure 1

**Stratigraphic Section,
Cabezon, Chamisa, Empedrado,
Ignacio Chavez, La Lena, and Ojito Wilderness Study Areas**

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER	LITHOLOGY
CENOZOIC	QUATERNARY		ALLUVIUM	
	TERTIARY		PEDIMENT	
			SANTA FE	
		MESAVERDE	PICTURED CLIFFS	
			LEWIS	
			CLIFF HOUSE	
			MENEFEE	
			POINT LOOKOUT	
			CREVASSE CANYON	
			GALLUP	
			MANCOS	
			DAKOTA	
			BRUSHY BASIN	
			WESTWATER CANYON	
			RECAPTURE	
MESOZOIC		MORRISON FORMATION		
		SAN RAFAEL	BLUFF	
			SUMMERVILLE	
			TODILTO	
			ENTRADA	
		CHIINLE FORMATION	UNNAMED SILTSTONE	
			PETRIFIED FOREST	
			POLEO SANDSTONE LENTIL	
			SALITRAL SHALE TONGUE	
			AGUA ZARCA	
			SAN ANDRES	
PALEOZOIC			GLORIETA	
			YESO	
			ABO	
		MAGDA-LENA	MADERA	
			SANDIA	
			ARROYO PENASCO	
PRI-CAM-BRIAN	PRECAMBRIAN		PRECAMBRIAN	

SOILS

La Lena's soils are highly susceptible to erosion, and opportunities for management or conservation are extremely limited. Generally, they have heavier (more clayey) soil textures, saline and/or alkali conditions that inhibit plant growth, and exhibit high susceptibility to water erosion and piping. Numerous nearly vertical-walled gullies are common. The sediment yield from the WSA as a whole is high. (Refer to Table 1).

VEGETATION

Table 2 summarizes the vegetation located in the La Lena WSA. Refer to Map C for further clarification.

Distribution of Rare, Threatened, Endangered and Sensitive Plant Species

Although no rare plants were located in this WSA. Potential habitats for Abronia bigelovii (Bigelow verbena-wildflower), Pediocactus papyracanthus (blue gramma cactus) and Astragalus kentrophyta var. neomexicana (New Mexico kentrophyta-wildflower) exist (Knight 1982).

WILDLIFE

San Luis Mesa, in the southern portion of the La Lena WSA, is ideal raptor (bird of prey) nesting habitat. At least one golden eagle and one great-horned owl nest occur within the WSA (USDI, BLM 1981). Other raptors observed nesting on San Luis Mesa outside of the WSA include: prairie falcons (within a mile of the WSA), red-tailed hawks (within a mile of the WSA), ravens and kestrels.

A small population of mule deer reside in the WSA, though their habitat is marginal. Other wildlife observed in the WSA include coyote, gray fox, blacktailed jackrabbit, Gunnison's prairie dog, and scaled quail. (A complete listing of species inhabiting the WSA can be found in the Run Wild computer printout (USDA, FS 1982) for Sandoval County, on file in the Rio Puerco Resource Area).

VISUAL RESOURCES

Scenic views of Cabezon Peak can be seen from within the La Lena WSA. Also visible is an expansive rolling valley cut by washes and arroyos, and evidence of past volcanic activity, including Mesa Chivato and the volcanic plugs surrounding it.

Two classification systems quantify visual resources. The BLM's Visual Resource Management (VRM) System (1971) divides the WSA into two management units. The southern half is rated VRM Class III, and the northern half VRM Class IV (refer to appendix 1).

CULTURAL RESOURCES

Cultural resource inventory within the La Lena WSA consists of reconnaissance of 1 section (640 acres) and several small (5-acre or less) in-house surveys in support of various BLM projects. Five known sites were located by Eastern New Mexico University in 1976. Three of the sites are

TABLE 1
SOILS, LA LENA WSA

*Unit	Soil Type	Percent Slope	Acres
Ak	Alkali Alluvial Land	-	184
Bf	Berent-Sandstone Outcrop Association	-	615
Cg	Christainburg Clay and Gullied Land	-	23
Fs	Fruitland-Slickspot Association	-	139
Lc	Las Lucas Loam	0-5	48
Le	Las Lucas Soils	5-9	862
Lp	Las Lucas-Persayo Association	-	557
Pf	Penistaja Pine Sandy Loam	0-5	292
Pn	Penistaja-Berent Association	-	378
Rk	Ravala Silty Clay Loam Alkali and Gullied Land	-	640
Rt	Rock Outcrop-Travessilla-Persayo Association	-	5,536
Sv	Shavano-Berent Association	-	1,036

*(Units correlate to a soils map on file in the Rio Puerco Resource Area.)

TABLE 2

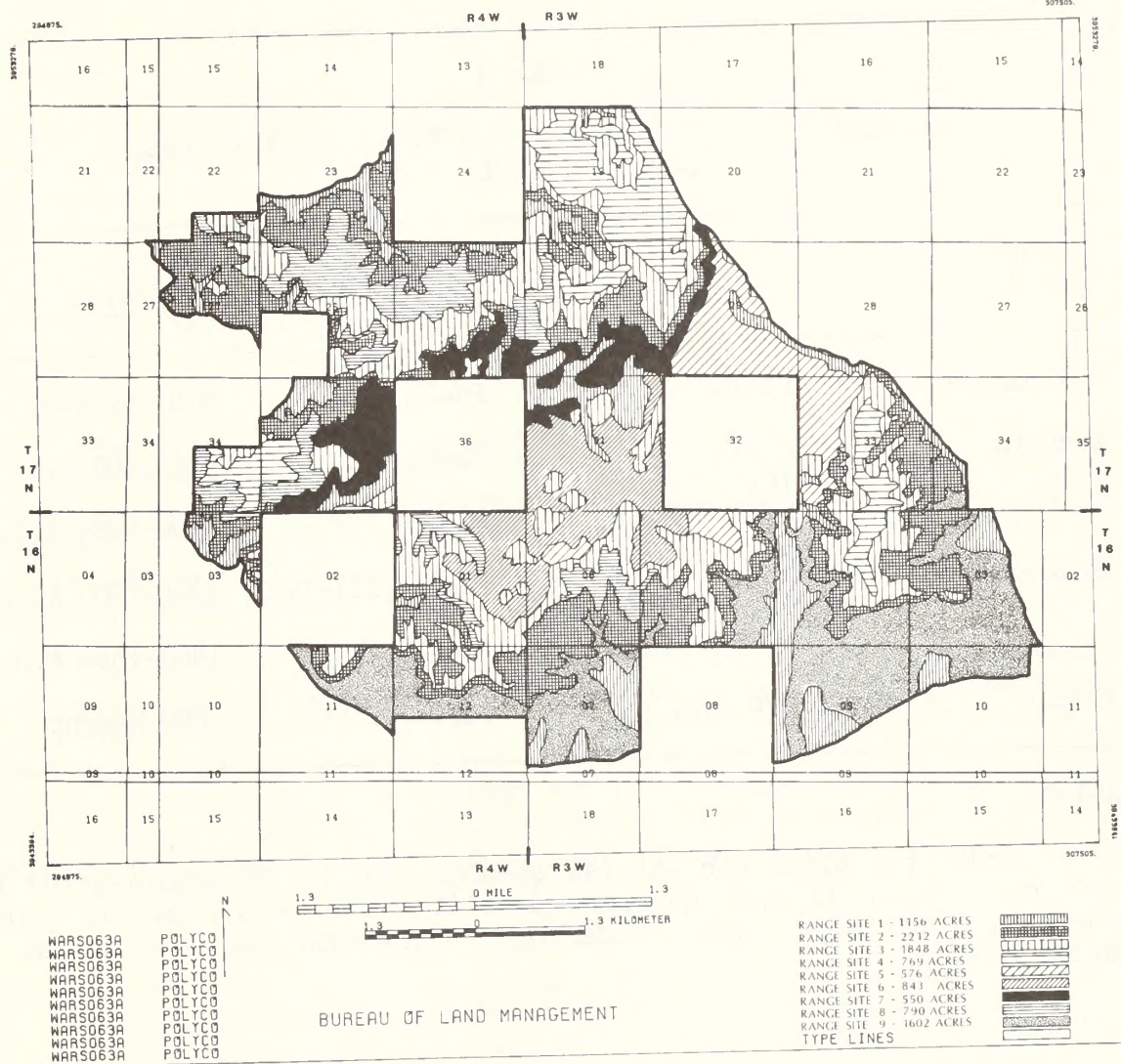
VEGETATION, LA LENA WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grama- galleta steppe	less than 1	N, S, E, W	21	9.28	good	Alkali sacaton, fourwing salt- bush, black greasewood	25-30	900	Alkali sacaton, giant sacaton, blue grama, vine mes- quite, galleta grass	Christ- ianburg Clay on Gullied land, Las Lucas- Persayo and Harola Silty Clay Loam, Alkali
2	Juniper- pinyon woodland	36	N, S, W	11	29.43	poor	Alkali sacaton, shadscale, galleta grass	10	475	Alkali sacaton, sidecoats grama, Indian rice- grass, Bigelow sage, galleta grass	011- Trave- silla- Shingle, Eroded- Rock Outcrop Complex
3	Juniper- pinyon woodland	3	N, S, W	27	8.68	poor- fair	One-seed juniper, big sagebrush, blue grama	15	450	Alkali sacaton, blue grama, Indian rice- grass, little blue- stem, one- seed juniper	Rock Outcrop- Trave- silla- Persayo Assoc- iation
4	Great Basin sagebrush	1	N or nearly flat	20	10.27	poor	Galleta grass, big sagebrush, blue grama	20	60-80	Indian rice- grass, bottlebrush squirrel- tail, antelope bitterbrush, big sage- brush	010- Trave- silla- Shingle Outcrop Complex

TABLE 2 (concluded)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
5	Grama- galleta steppe	2	S and nearly flat	18	13.03	poor- good	Broom snake- weed, galleta grass, blue grama	30	650	Western wheatgrass, big sage- brush, galleta grass, blue- mutton blue- grass, blue grama	Shavano- Berent Assoc- iation
6	Grama- galleta steppe	4	W	16	13.00	fair	Galleta grass, red threeawn, broom snakeweed	23	600	Blue grama, Indian rice- grass, spike dropped, sand drop- seed	Shavano- Berent Assoc- iation
7	Grama- galleta steppe	4	S, W	10	4.70	poor- fair	Alkali sacaton, galleta grass, broom snakeweed	20	440	Black grama, blue grama, Indian rice- grass	Penistaja Pond Assoc- iation

VEGETATION, LA LENA WSA



MAP C

clearly Navajo (two sweat lodges and a livestock corral) and the remaining two are lithic scatters of undeterminable cultural affiliation.

A minimum of 150 sites can be projected within the boundaries of this WSA, though actual site density may exceed this estimate. High site densities, particularly Navajo, are recorded on Torreon Wash immediately north of the WSA boundary and probably continue into the northern periphery of the La Lena WSA. Some evidence of use by Archaic, Prehistoric Pueblo, Pueblo and contemporary peoples exists within this WSA. (Refer to Table 3.)

TABLE 3
ARCHAEOLOGICAL SEQUENCE FOR RIO PUERCO RESOURCE AREA
(After Dittert, 1959)

Culture Period	Time	Culture Period	Time
Paleoindian	>250 B.C.	Pueblo II	870-950 A.D.
Archaic	>250 B.C.	Pueblo II	950-1100 A.D.
	700 D.C.	Pueblo III	1100-1200 A.D.
	(500-700 BMIII)		
Basketmaker	700 A.D.	Pueblo III-IV	1200-1400 A.D.
	800 A.D.	Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

AIR QUALITY

Under the Clean Air Act (as amended, 1977), BLM-administered lands were given a Class II air quality classification, which allows moderate deterioration associated with moderate, well-controlled industrial and population growth.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable or salable minerals is occurring within the boundaries of the La Lena WSA. As of August 1982, a total of 551 mining claims have been staked within the WSA, as well as 18 oil and gas leases. No existing active mines or wells exist within the WSA boundaries, and the level of exploration activity has been low.

Table 4 indicates that the highest potential for development is associated with the coal and humates that occur in the Mesaverde Group. The geologic environment, the inferred geologic processes, the reported mineral occurrences and known mines or deposits indicate a high favorability for the accumulation of these two mineral resources. The completion of a successful exploration program could lead to the development of a moderate-sized coal strip mine in the northern half of the La Lena WSA. All of the other commodities have only a low to moderate potential for development.

WATERSHED

The La Lena WSA lies in part of the Rio Puerco watershed, which is one of the major tributaries of the Rio Grande, embracing approximately a third of the drainage that lies in New Mexico above the Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth (6 percent) of the waters of the Rio Grande, yet it is the source of over half (56 percent) of the sediment that obstructs the main Rio Grande channel (Waite 1972).

The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by sheep and cattle overgrazing in the late 1800's and early 1900's. This use has resulted in extensive sheet, rill and gully erosion in all areas except the steep slopes of mesas. The WSA is especially vulnerable to upland erosion because of sparse vegetation, relatively steep slopes, and the occurrence of violent thunderstorms. During a six-year study, Leopold (1966) found that upland sheet erosion was the most significant source of sediment in a semiarid area of New Mexico.

The Arroyo Empedrado (Rock Basin) watershed is presently being intensively monitored. Gages now measure rainfall runoff and sediment from each event. Vegetation studies include utilization by livestock, range condition, trend, and production as part of a research project in conjunction with the U.S. Forest Service, Rocky Mountain Forest and Range Experimental Station. This project is designed to monitor and document quantitative change in runoff and sediment discharge from rangelands subject to intensive grazing management. The results of this monitoring will be used for predicting hydrologic response to grazing management in future BLM planning and environmental studies.

LIVESTOCK GRAZING

Five grazing allotments contain acreage within the boundaries of this WSA (refer to Map D). Of these five allotments, three have acreage in another WSA. Table 5 displays grazing information pertaining to these five allotments.

TABLE 4
MINERAL RESOURCE ASSESSMENT, LA LENA WSA

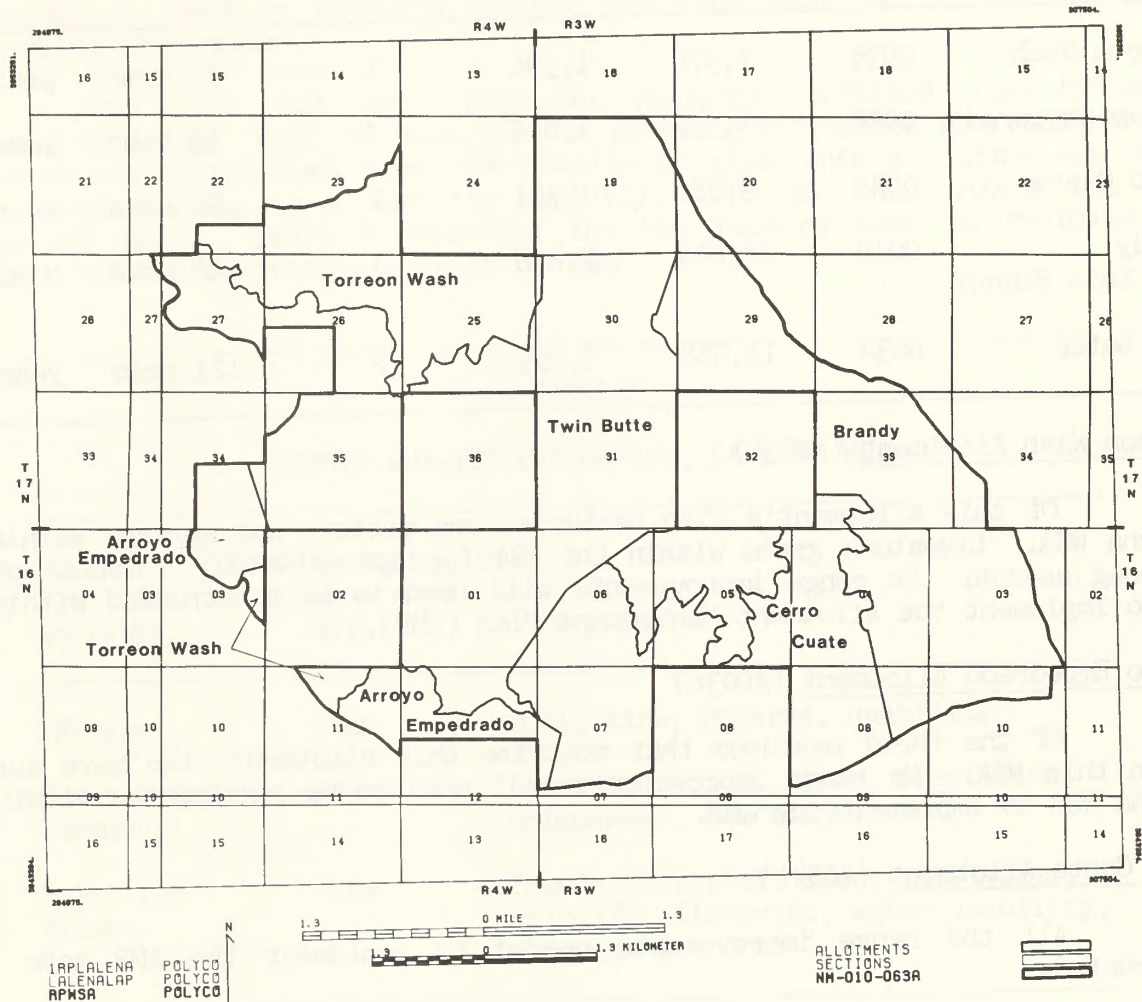
Mineral Commodity	Geologic Unit	Development Potential
<u>Locatables</u>		
Uranium and Thorium	Abo Formation	---
	Morrison Formation	3-B
	Dakota Formation	---
	Mancos Formation	---
Metals (Copper, Silver Molybdenum and Gold)	Agua Zarca Member	2-B
	Abo Formation	2-B
	Madera Formation	2-B
Non-Metallics (Gypsum)	Todilto Formation	3-A
<u>Leasables</u>		
Oil and Gas	Sandia Formation	3-C
	Entrada Formation	3-C
	Dakota Formation	3-C
	Mancos Formation	3-C
	Mesaverde Group	3-C
Geothermal	No Specific Formation	1-A
Sodium and Potassium	No Specific Formation	2-A
Coal	Mesaverde Group	4-B, N 1/2
		2-B, S 1/2
Bituminous Rock	No Specific Formation	2-C
<u>Salables</u>		
Sand and Gravel	No Specific Formation	2-B
Clay (Common Varieties)	No Specific Formation	3-A
Humates	Mesaverde Group	4-B, N 1/2
		2-B, S 1/2
Petrified Wood	Mesaverde Group	2-A
Cinders	No Specific Formation	2-B

A - Insufficient Data; B - Indirect Evidence; C - Direct Evidence
D - Abundant Direct and Indirect Evidence

- 1 - The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.
- 2 - The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.
- 3 - The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.
- 4 - The geologic environment, the inferred geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

Adapted from GEM Study and Turner, BLM, 1982.

RANGE ALLOTMENTS, LA LENA WSA



BUREAU OF LAND MANAGEMENT

MAP D

TABLE 5

LIVESTOCK GRAZING INFORMATION, LA LENA WSA

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Torreon Wash	0035	7,976	1,396	1	88 head	yearlong
Arroyo Empedrado	0036	4,536	1,042	2	59 head	yearlong
Cerro Cuate	0041	3,886	1,701	1	58 head	yearlong
Brandy (San Luis Place)	0010	12,604	2,898	1	188 head	8 months
Twin Butte	0034	12,588	3,559	2	121 head	yearlong

Torreon Wash Allotment (#0035)

Of this allotment's five pastures, one pasture has acreage within the La Lena WSA. Livestock graze within the WSA for approximately 5 months of the yearlong season. No range improvements will need to be constructed within the WSA to implement the Allotment Management Plan (AMP).

Arroyo Empedrado Allotment (#0036)

Of the three pastures that comprise this allotment, two have acreage within this WSA. No range improvements will need to be constructed within the La Lena WSA to implement the AMP.

Cerro Cuate Allotment (#0041)

All the range improvements needed to implement the AMP have been constructed.

Brandy Allotment (San Luis Place) (#0010)

All the range improvements needed to implement the AMP are in the process of being constructed, according to the nonimpairment standards of the Interior Management Policy and Guidelines for Lands Under Wilderness Review.

Twin Butte Allotment (#0034)

All the range improvements needed to implement the AMP are in the process of being constructed, according to the nonimpairment standards of the Interior Management Policy and Guidelines for Lands Under Wilderness Review.

FOREST PRODUCTS

Some potential for home use fuelwood may exist.

RECREATION

The BLM has no visitor use data for the La Lena WSA. The primary recreation use is believed to be some big game hunting and its associated activities -- camping, ORV use and hiking. Possible activities not directly associated with hunting include rock-hounding, horseback riding, and photography. Letters received by the BLM show that scenic and geological sightseeing also occur.

The 1971 BLM Unit Resource Analysis utilized the Recreation Information System (RIS) to describe the existing recreation environment. The RIS is an evaluation that rates the quality of experience a visitor can expect while participating in a specific activity. The WSA lies within the Chico Arroyo RIS unit. Table 6 describes the key factors used to evaluate each activity and the activity's quality rating.

TABLE 6
SCENIC QUALITY EVALUATION, LA LENA WSA

Activity	Quality Rating in Chico Arroyo Unit	Key Factors
ORV use	high	Soil, size, hazards, usability
Sightseeing (Scenery)	medium	Landform, color, water, vegetation, uniqueness, intrusions
Primitive Values	low	Scenic qualities, size, intrusions, wildlife, fisheries, water usability, uniqueness

EDUCATION AND RESEARCH

The Arroyo Empedrado watershed is presently being intensively monitored (refer to the watershed discussion of this section). Educational-interpretive potential exists in the Empedrado WSA in the form of a "living laboratory" for the observation and study of natural systems.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the area for firewood gathering and hunting. Recent survey near the WSA and interviews with officials of the Jemez, Zia, Santa Ana Pueblos and the Canyoncito Navajo Reservation generally concede that

many places of religious significance exist in and near the La Lena WSA. Specific site locations are not known to the lay members of the tribes, and tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional uses within the boundaries of this WSA will probably continue.

WILDLIFE

Adequate nesting habitat exists in the La Lena WSA to support greater numbers and kinds of raptors. San Luis Mesa is considered to be one of the most important nesting areas within northwest New Mexico for at least six species of raptors (birds of prey) (BLM 1981). A BLM survey in April, 1980 located 15 nest sites including; one active golden eagle nest, one active prairie falcon nest, one active great-horned owl nest, and one active red-tailed hawk nest.

A larger prey base is needed, however, before raptors will be attracted to the WSA. This could occur in the future when rodent populations reach a higher level and as range conditions improve as a result of changes in grazing management.

The resident deer herd is probably at its maximum capacity as deer habitat conditions are marginal. Small game (rabbits/quail) will probably increase with improvement in range conditions. One wildlife water device with a protective exclosure fence is present in the WSA.

Human use of the wildlife resource in the WSA is restricted to small game hunting, trapping, and incidental observation. Control of coyotes preying on livestock has occurred in the past and will probably be requested in the future.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work in the La Lena WSA is documented in the Wilderness Intensive Inventory (USDI, BLM 1980). These imprints include a fenceline network, three earthen dams, three drill pads, and nine two-track ways. The BLM considers the overall effects of these imprints upon the entire WSA when assessing naturalness. This is a function of the size of the unit and the number and distribution of the impacts.

The drill pads are in the process of natural revegetation, the retention dams blend well with the existing environment because they have begun to silt in, and revegetate. The two-track ways are maintained solely by vehicular travel and would return to a natural condition if use were discontinued. Several routes are no longer visible since they were identified during the wilderness intensive inventory.

The WSA as a whole appears to have been affected primarily by the forces of nature, and is assessed as exhibiting the wilderness characteristic of naturalness.

Solitude

The BLM considers solitude as the state of being alone or removed from habitations; isolation.

In the La Lena WSA, the feeling of being isolated from others is enhanced by a steep-sided mesa, and numerous arroyos. These features allow visitors to be screened from one another and avoid evidence of others. Although the opportunity to experience solitude exists within La Lena, it cannot be properly described as outstanding.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities or an activity of outstanding quality. The La Lena WSA does not exhibit either of the above criteria.

Special Features

The San Luis Mesa raptor habitat is the predominate special feature located in the La Lena WSA. Some cultural sites also have been noted. (Refer to Section 2, Existing Resources).

Multiple Resource Benefits

The La Lena WSA contains some natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would

carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM. A more detailed discussion of multiple resource benefits may be found in Section 6 below under the discussion of the impacts of the All Wilderness Alternative.

Diversity In The National Wilderness Preservation System

Ecosystems Present

The La Lena WSA, according to Robert G. Bailey (1980) falls under the Dry Domain in the Highland Province, and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into two sections: Juniper-Pinyon Woodland and Sagebrush-Saltbush Mosaic, and Grama Galleta Steppe and Juniper-Pinyon Mosaic.

The three A.W. Kuchler types (1964) found in the WSA are described as follows.

Gram-Galleta Steppe (47). Total acres in the WSA 3,469, 34 percent of the WSA.

Juniper-Pinyon Woodland (21). Total acres in the WSA 5,961; 58 percent of the WSA.

Great Basin Sagebrush (32). Total acres in the WSA 880. 8 percent of the WSA.

Map E displays those ecosystems. Vegetation Map C, breaks each ecosystem into more refined site categories which are narrated in Table 2 (Vegetation, Las Lena WSA) located in Section 2, Existing Resources; Vegetation.

Distance to Population Centers

The La Lena WSA is within one day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census (USDI, BC 1981) as being a Standard Metropolitan Statistical Area (SMSA refer to Glossary).

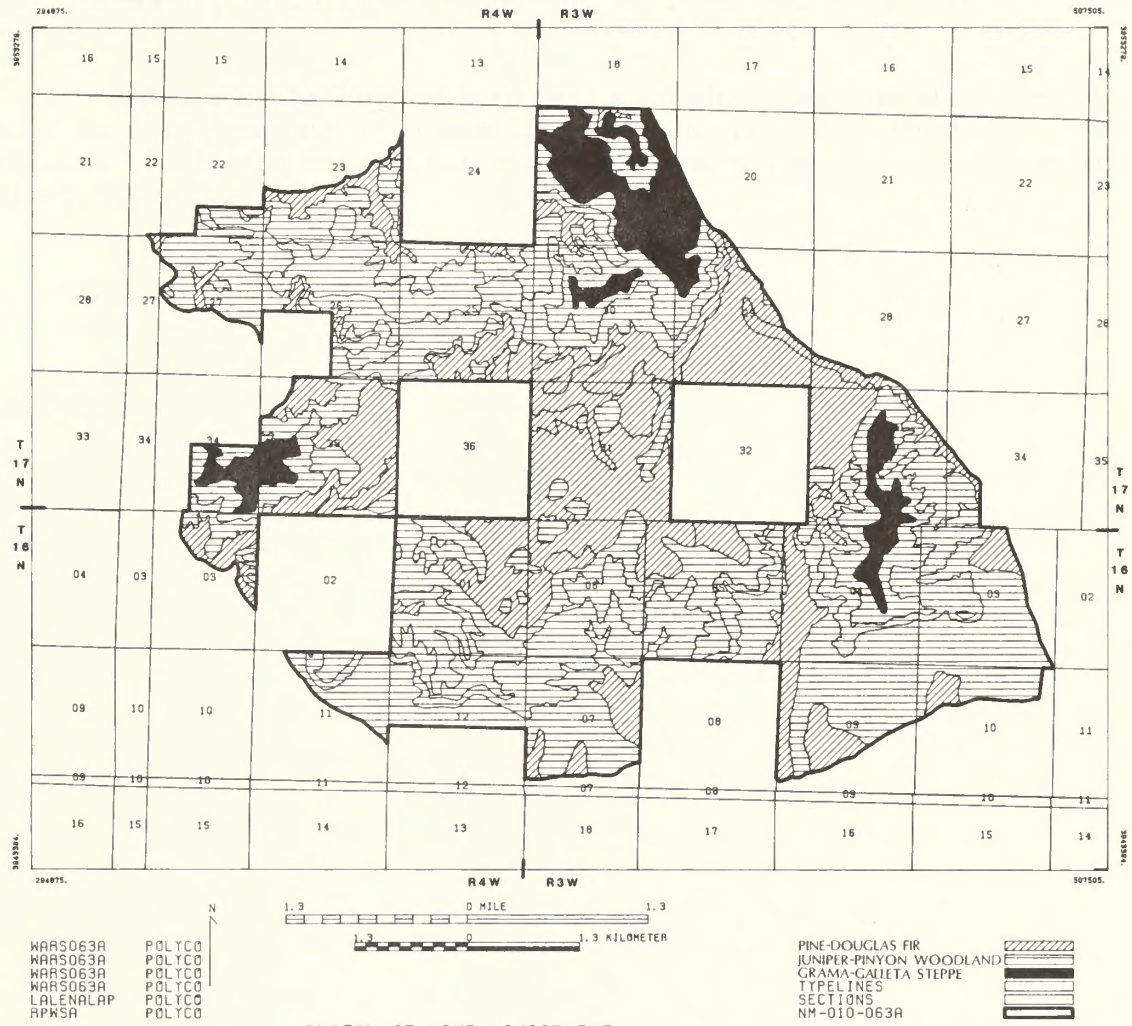
MANAGEABILITY

To be recommended as suitable, the La Lena WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall pattern of land status.

Valid existing rights in the La Lena WSA are accorded livestock operators and include necessary access for ranch operations and the maintenance needs of "grandfathered" range improvements. Reasonable access is also guaranteed to state inholdings. Based on present use, these access needs would result in the occurrence of generally low levels of use incompatible with wilderness designation.

The basic land configuration of the La Lena WSA could make it difficult to manage over an extended time period. Private and state parcels

ECOTYPES, LA LENA WSA



BUREAU OF LAND MANAGEMENT

MAP E

SECTION 5

PUBLIC INVOLVEMENT OVERVIEW

This report was proposed after considerable public input obtained by a variety of means, including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory and will continue during the preparation of the statewide wilderness EIS.

Proponents for wilderness status of the La Lena WSA emphasized its natural character, and opportunities for solitude and primitive and unconfined recreation.

Opponents highlighted problems with the land ownership configuration, as well as the presence of human impacts and possible limitations on ranch operations. (Refer to the public response summary for the wilderness intensive inventory, appendix 3).

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the La Lena WSA: the All Wilderness Alternative, No Wilderness Alternative (amend the existing land use plan), and the No Action Alternative (manage under the existing land use plan).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 10,310 acres of public land within the La Lena WSA would be recommended as suitable for wilderness designation. If the WSA is designated as wilderness, existing and potential uses (refer to Section 3) would be regulated by the Wilderness Management Policy (USDI, BLM 1981).

The All Wilderness Alternative would not have significant impacts on forest products, air quality and realty actions in the La Lena WSA. For this reason, these resources are not included in the following discussion.

Impacts to Minerals

Locatable mineral development within the La Lena WSA would be affected by wilderness designation because mining claims could not be located after January 1, 1984, and operations conducted after December 31, 1983, would include only development work, extraction and patenting.

Discretionary leasing and mineral materials sales would most probably cease following wilderness designation; only those leases in effect prior to designation would be allowed to continue. As of January 1, 1984, all of the minerals under lands designated as wilderness will be withdrawn from disposition under all laws pertaining to mineral leasing.

The net effect of these restrictions would be to significantly lower the potential for development of all locatable and leasable minerals that may occur within the wilderness. Although a low-to-moderate favorability exists for the occurrence of copper, silver, uranium, thorium, gypsum, bituminous rock, sand, gravel, clay and petrified wood, the designation of the La Lena WSA as wilderness would curtail exploration and prevent possible future extraction.

Given today's economic conditions, there is little demand for the extraction of copper, silver, uranium, thorium, bituminous rock, molybdenum, gold or clay, from La Lena's reserves.

Although gypsum, sand, gravel and humates occur throughout northern New Mexico, any of these resources located in La Lena WSA would be considered economically attractive regionally. This occurs because extraction near the source of utilization is essential to achieving an acceptable profit margin. Assuming favorable economic conditions, a moderately-sized coal mine could be developed. This option would be precluded by wilderness designation.

If the La Lena WSA is recommended suitable for wilderness designation, additional surveys will be done by the United States Geologic Survey (USGS) and the Bureau of Mines (BM).

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

Restrictions on surface-disturbing and mechanized activities would provide long-term protection for watershed, soils, and vegetation, including threatened and endangered plant species (refer to Section 2, Existing Resources; Vegetation).

Wildlife

Restrictions on surface-disturbing activities and mechanized activities would provide protection for wildlife habitat. This would particularly benefit the San Luis Mesa raptor habitat. However, restraints on methods of animal damage control could occur.

Visual Resources

The visual resources of the La Lena WSA would be protected. Minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted.

Cultural

Site condition monitoring associated with surveillance could prove beneficial because over 80 percent of the Rio Puerco Resource Area's known sites suffer from significant natural deterioration. It is assumed that enhanced monitoring would take place under wilderness management. This could increase the ability to detect, and if warranted, to arrest serious deterioration of sites at relatively early stages. Inventory and evaluation of those cultural resources within the WSA could also increase.

Most surface-disturbing activities would not be allowed under wilderness designation. This could limit the destruction of cultural sites through other than natural causes.

The wilderness management policy allows the natural decay of sites. Excavation and stabilization may be permitted on a case-by-case basis by the State Director where the project would not degrade the overall wilderness character and when such activity was needed to preserve the particular cultural resource.

If these activities are disallowed on some sites, they may deteriorate. The increased public awareness of wilderness and thus potential increased visitation could increase vandalism if proper visitor management tools were not employed.

Livestock Grazing

The La Lena WSA supports approximately 1,410 AUMs; these existing levels of livestock operations as well as necessary vehicle access and the maintenance of "grandfathered" range improvements are valid existing rights and would continue under wilderness designation.

Livestock operations in the La Lena WSA would be affected by wilderness designation. These effects may result from limitations imposed on the maintenance of existing range improvements.

Although grazing is an activity compatible with wilderness, limitations on vehicle access, type of construction materials, or location of improvements may occur in order to protect wilderness characteristics.

A major impact to these allottees holding permits in the La Lena WSA could occur because of limitations on the use of motorized vehicles in designated wilderness areas. Most of the ranchers grazing livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. These ranchers live in the vicinity of Cuba and Albuquerque, near their primary sources of income.

Therefore, the weekends are the time when most of the ranchers can attend to their grazing allotments, and the pickup truck has become increasingly important as a livestock management tool. Wilderness designation would hinder the effective use of already limited time to tend to weekend ranching operations.

Recreation

Recreation activities that require motorized vehicles would be affected, including some hunting and motorcross activity.

Education/Research

Wilderness designation would ensure the preservation of the existing "natural laboratory" in the La Lena WSA. (Refer to Section 3, Existing and Potential Uses).

Native American Uses

Restrictions on vehicular access could limit Native American uses. However, the preservation of solitude and naturalness could enhance these activities, because they are often dependent on a primarily natural setting.

NO WILDERNESS ALTERNATIVE

Under the No Wilderness Alternative (but amend the existing plan), the La Lena WSA would be recommended unsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses (refer to Section 3) would continue, without regard for the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1979). The San Luis Mesa region (3,200 acres) contained in the La Lena WSA would be recommended for protection because it constitutes some of the best raptor habitat in northwest New Mexico (refer to Section 3, Wildlife).

Because of its importance to nesting raptors, San Luis Mesa would be protected from undue human interference by instituting the following policies.

1. No activity (excluding those associated with valid existing rights) would be permitted in the protected area from January 1 thru July 30. (Prime nesting time.)
2. No additional permanent access would be approved within the protected area.

3. No activity which would alter the structure of the cliffs along San Luis Mesa would be allowed.

4. Any future powerline and pipeline rights-of-ways would be routed through gaps and breaks rather than over the cliff edges.

The most probable use of the La Lena WSA if it is not designated as wilderness would be continued ORV use, livestock grazing and possible mineral exploration and development.

The No Wilderness Alternative would not have significant impacts on visual resources, air quality, realty actions, livestock grazing, minerals, or recreation. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

To date, no other protective designation beyond protection of raptor habitat has been proposed for the La Lena WSA.

The uses stated as probable would subject the La Lena WSA's wilderness characteristics to extensive surface disturbing activities. This would, over time, significantly impact the wilderness characteristics of solitude and naturalness. However, one of La Lena's primary wilderness values, the San Luis Mesa raptor habitat, would be adequately protected.

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

Impacts would be the same as stated in the No Action Alternative. This impact would be somewhat mitigated in the protected area, since surface disturbing activities will be controlled, to a degree.

Wildlife

Non-wilderness management could result in a significant increase in human activity, thus impacting those wildlife species dependent on an unmodified ecosystem. Protective designation for the existing raptor habitat, as outlined, would adequately protect sensitive raptor species. A wider range of habitat management actions could occur under this alternative and, in the long run, produce a more diverse habitat.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent BLM patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Education/Research

The natural setting which supports the outstanding raptor habitat would be maintained, thus preserving its potential for study.

Native American

The natural settings on which these uses are often dependent, would be subject to surface disturbing activities.

NO ACTION ALTERNATIVE

"No Action" means that the La Lena WSA would be managed as undesignated multiple use land. If the WSA is not designated wilderness, existing and potential uses would continue without regard for the Interior Management Policy and Guidelines for Lands Under Wilderness Review (1979). The most probable uses of the La Lena WSA if it is not designated as wilderness would be livestock grazing, mineral exploration, development and ORV use.

The No Action Alternative would not have significant impacts on recreation, air quality, realty actions, range or minerals. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

Mineral exploration and development, increased ORV activity and increased use of motorized vehicles would result in disruption of wildlife habitat (including San Luis Mesa's important raptor habitat), scenery and vegetation as well as reduce the opportunity to experience solitude. Over time, all of these uses could be expected to significantly impact naturalness, and degrade or eliminate the La Lena WSA's wilderness character.

Impacts to Other Resources and Uses

Soils, Watershed, and Vegetation

Continued vehicular access and other surface disturbing activities, could result in additional ruts and create the potential for reduced watershed quality. This occurrence would also affect soils and vegetation.

Wildlife

Non-wilderness management could result in a significant increase in human activity and thus impact those wildlife species dependent on an unmodified ecosystem, such as raptor species. However, a wider range of habitat management actions could occur under this alternative and in the long run, produce a more diverse habitat for wildlife.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Education and Research

The natural setting supporting the special features discussed in Section 4, Wilderness Criteria, would be subject to increased surface disturbance and vehicular travel. This would considerably degrade La Lena WSA's potential for use as a "living laboratory". (Refer to Section 3, Existing and Potential Uses, Education and Research).

Native American Uses

The natural settings on which those uses are often dependent, would be subject to surface disturbing activities.

Visual

Existing visual resources would deteriorate.

SECTION 7

RECOMMENDED ACTION

RECOMMENDED ACTION DESCRIPTION

It is recommended that the La Lena WSA be considered unsuitable for wilderness designation, and the No Wilderness Alternative (amend the existing plan) be selected. This would protect 3,200 acres of the San Luis Mesa raptor area.

RATIONALE

La Lena WSA contains marginal wilderness characteristics. Overall, the area is natural, and does provide some opportunity to experience solitude. This opportunity cannot be described as outstanding. Those scenic and wildlife special features and the sightseeing opportunities related to them, are concentrated along the San Luis Mesa raptor habitat area. This mesa constitutes some of the best raptor habitat in northwest New Mexico.

These values would be adequately protected under the management prescribed in the No Wilderness Alternative (amend the existing plan). Those wilderness values which would be foregone, are not significant enough to offset those commodities which would be foregone by wilderness designation. These include the development of possible gypsum, sand, gravel and humate resources for regional demand; curtailment of any vehicular travel; potential for the development of a small coal mine.

In addition the basic land configuration of La Lena WSA does not lend itself to effective management for the preservation of wilderness.

CONSISTENCY WITH OTHER PLANS

There are no known inconsistencies with the recommended action and the policies of local, state, or federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Wilderness Draft Environmental Assessment.

CRITERIA FOR VISUAL RESOURCE MANAGEMENT CLASSES

-
- Class I - Applies only to classified special areas, e.g., roadless, wilderness, primitive, natural areas, etc. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
- Class II - Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.
- Class III - Landscapes with Class B scenery quality and high visual sensitivity in the background visual zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground visual zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- Class IV - Landscapes with Class B scenery quality and high visual quality sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
- Class V - Applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions, or to areas that have the potential for enhancement. This classification indicates that change is needed. The class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objectives should be identified.
-

Source: After BLM Manual 6310 (U. S. Department of the Interior, Bureau of Land Management, 1975).

VRM CLASS RATINGS

"The purpose of a Visual Resource Management (VRM) Class is to reduce the visual impacts of developed activities and to manage the quality of the visual environment."

VRM classes are determined by combining the ratings from scenic quality classes, visual sensitivity levels, and distance zones. Scenic quality classes are rated for landform, water, color, vegetation, intrusions and uniqueness. These elements are combined and the area is quantified as one of the following classes:

Class A - Unique, outstanding features

Class B - Outstanding features common to the physiographic region

Class C - Features common to the physiographic region

Sensitivity levels are determined by frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and assigned a high, medium or low sensitivity level.

Distance zones are placed in three categories: foreground/middleground zone, background zone, seldom seen zone. The foreground/middleground zone is closer to the view and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are less detailed to the viewer and most impacts blend with the landscape because of the distance viewed from.

Ratings from scenic quality classes, visual sensitivity levels and distance zones are combined to form VRM classes. The VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape. See Appendix 3 for definitions of each VRM class.

APPENDIX 3

PUBLIC RESPONSE SUMMARY

Unit Number: NM-010-63(a)

Unit Name: LaLena

FAVOR
Wilderness Study

OPPOSE
Wilderness Designation or
Wilderness Study Status

I S
10 10

I S
3 8

I S Supporting Reasons

3	3	Meets Naturalness Criterion
3	3	Offers Opportunities for Solitude
3	3	Offers Opportunities for Recreation
1	1	Manageable as Wilderness
7	7	No Supporting Reasons Offered

I S Supporting Reasons

1	6	Does Not Appear to Be Natural
1	1	Resource Conflicts
1	1	No Supporting Reasons Offered

I S FORM LETTERS & PETITIONS

2524	2659	Endorsements of Conser- vationist proposal
1	615	Petition Endorsing Con- servaionist Proposal

I S FORM LETTERS & PETITIONS

SEQUENCE NUMBERS

C015	H028
K018	S035
F014	D010
L022	S047
K017	
L020	
W033	

SEQUENCE NUMBERS

G025
G011
O011

APPENDIX D

WILDERNESS ANALYSIS REPORT

OJITO WILDERNESS STUDY AREA

NM-010-024
ALBUQUERQUE DISTRICT

RIO PUERCO RESOURCE AREA



SECTION 1

GENERAL DESCRIPTION

LOCATION

The Ojito Wilderness Study Area (WSA;NM-010-024) contains approximately 11,919 acres of public land, and is located approximately 5 miles southwest of the village of San Ysidro. It is delineated on the north by property boundaries, on the south by a combination of gas pipeline right-of-way and a maintained road, on the west by a powerline right-of-way and on the east by a combination maintained road and ridgeline (refer to Map A and B).

The U.S. Geological Survey topographic maps that cover this WSA are Ojito Spring, San Ysidro, Sky Village NE, and Sky Village NW (7.5 minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Ojito WSA lies at the approximate center of northwestern New Mexico. Physiographically, the WSA is in the Navajo section of the Colorado Plateau province. The Navajo section is characterized by outcrops of sub-horizontal sandstone with lesser amounts of shale which have been subjected to intensive arid-cycle erosion. Landforms in this region include mesas, cuestras, rock terraces, retreating escarpments, canyons, arroyos and badlands.

There is approximately 600 feet of relief in the Ojito WSA. From a low elevation of 5,650 feet in Querencia Arroyo, the terrain reaches up to 6,261 feet on a mesa top in the northwestern part of the WSA. Principal landforms in the Ojito WSA are Bernalillito Mesa and the southern end of Cucho Mesa. The major drainages found in the WSA are Cucho Arroyo, Querencia Arroyo, Arroyo Bernalillito, and Arroyo La Jara. The overall geomorphology of the WSA is formed by arroyos cutting sandstone-capped mesas.

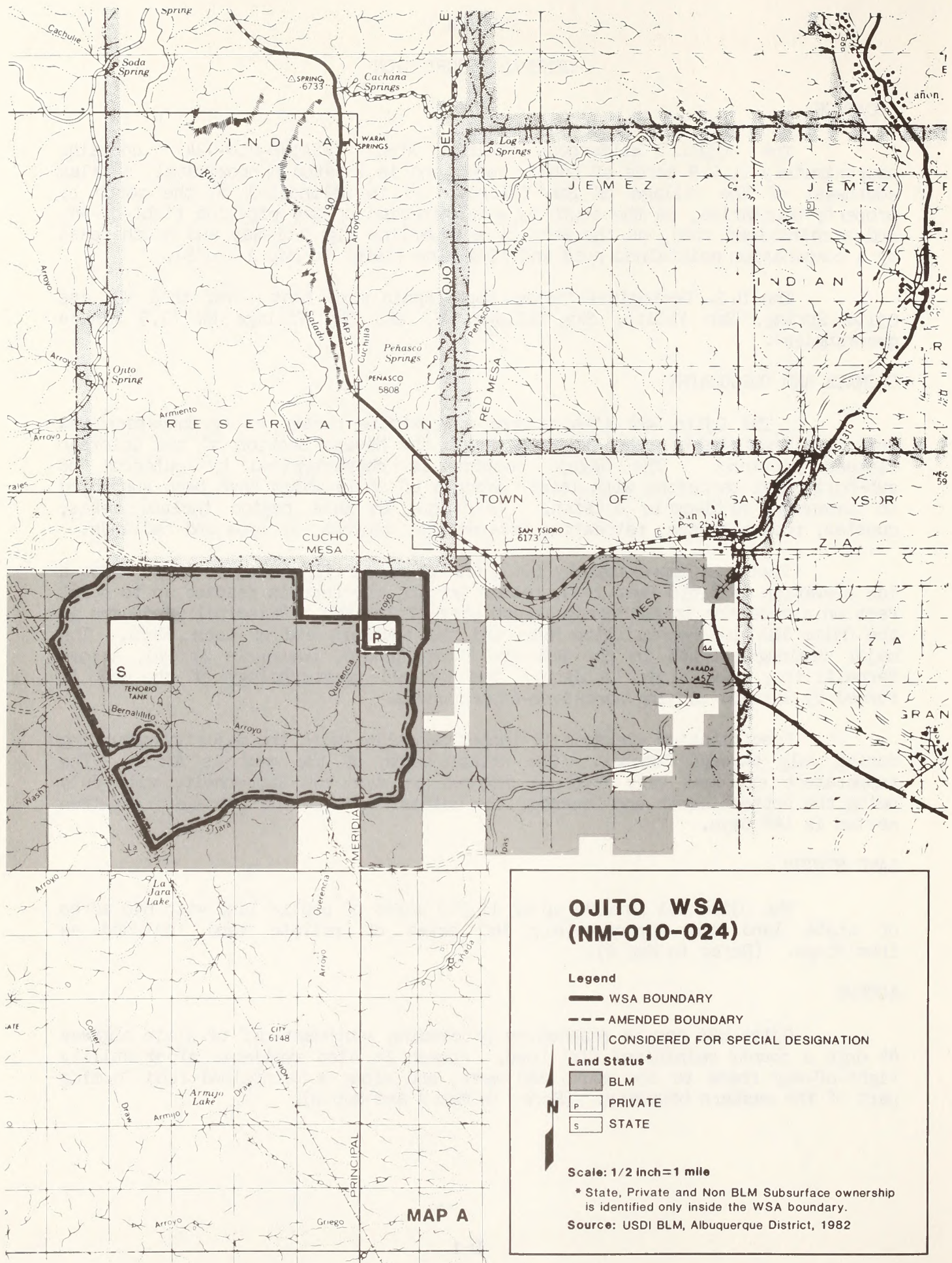
Precipitation averages 10 inches annually, with the majority occurring during July through October. The driest month of the year is April. The temperature extremes vary from -0 degrees to over 100 Fahrenheit, with July being the hottest month and December the coldest month. The average frost-free period is 148 days.

LAND STATUS

The Ojito WSA is made up of 11,919 acres of public land with 640 acres of state land and approximately 160 acres of private land included as inholdings. (Refer to Map A).

ACCESS

Ojito WSA can be reached by proceeding southwest off of State highway 44 onto a county maintained dirt road. Access is also available along utility right-of-way roads to the south and west, and along a maintained road forming part of the eastern boundary. (Refer to Map A and Map B).



OJITO WSA (NM-010-024)

Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- CONSIDERED FOR SPECIAL DESIGNATION

Land Status*

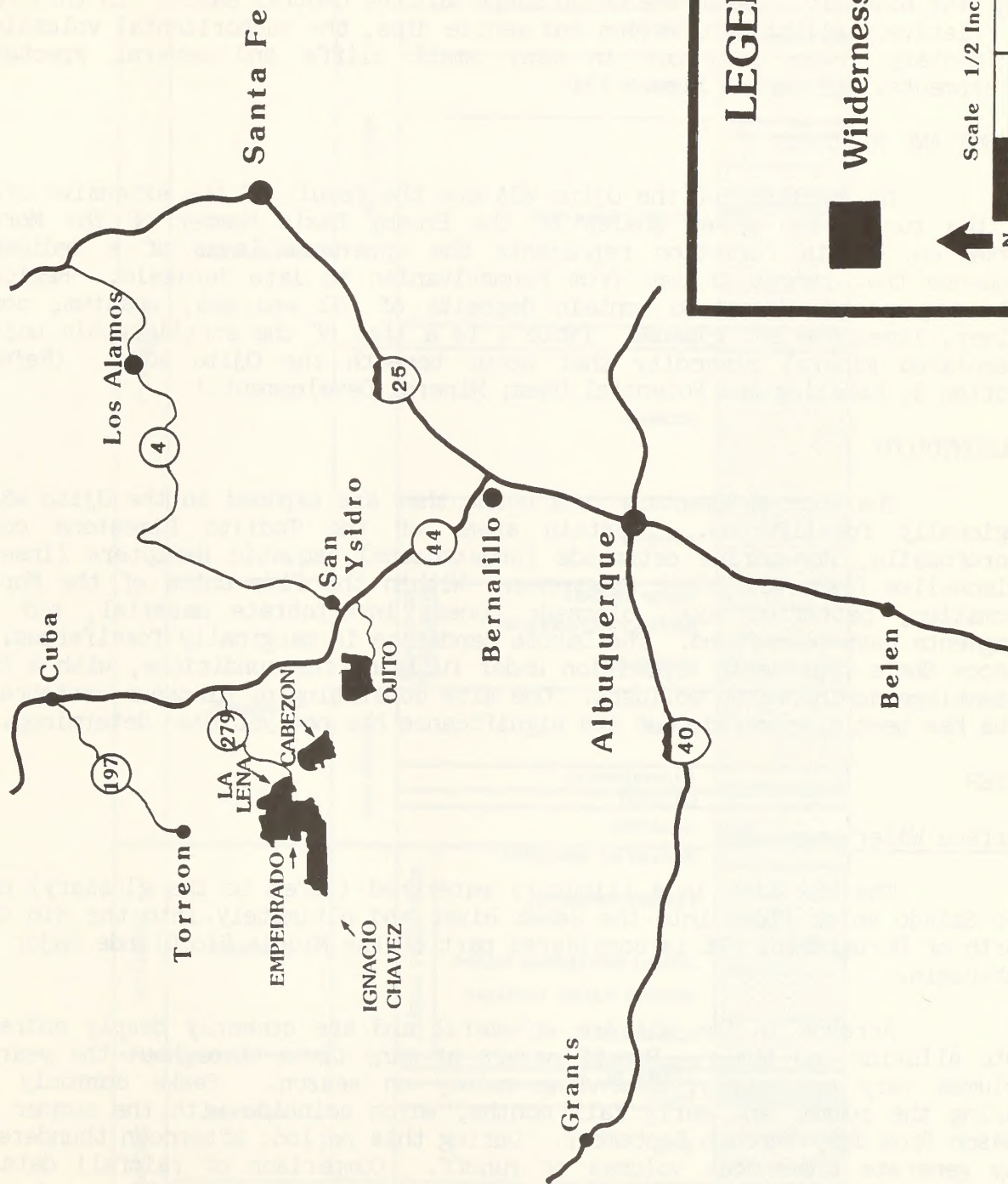
- BLM
- PRIVATE
- STATE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982

MAP B GENERAL LOCATION



SECTION 2

EXISTING RESOURCES

GEOLOGY

Structurally, the Ojito WSA is relatively simple. There are few faults and only gentle folding [associated with the termination of the McCartys syncline]. The regional dip is at a low angle to the northwest and is into the San Juan Basin. The WSA is situated on the southeastern margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dips, the subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and several spectacular escarpments. (Refer to Figure 1).

ENERGY AND MINERALS

The badlands of the Ojito WSA are the result of the extensive erosion of the purple and green shales of the Brushy Basin Member of the Morrison Formation. This formation represents the uppermost layer of a sedimentary sequence that ranges in age from Pennsylvanian to late Jurassic. Regionally this sequence is known to contain deposits of oil and gas, uranium, copper, silver, limestone and gypsum. Table 4 is a list of the stratigraphic unit and associated mineral commodity that occur beneath the Ojito WSA. (Refer to Section 3, Existing and Potential Uses; Mineral Development.)

PALEONTOLOGY

The four sedimentary rock units that are exposed in the Ojito WSA are regionally fossiliferous. Certain areas of the Todilto Limestone contain microfossils, non-marine ostracods (crustaceans), aquatic Hemiptera (insects), salmon-like fish, and plant fragments. Within the five units of the Morrison Formation, petrified wood, dinosaur bones, invertebrate material, and plant fragments have been found. The Dakota Sandstone is marginally fossiliferous. The Mancos Shale represents deposition under fully marine conditions, with a fossil assemblage dominated by molluscs. One site consisting of dinosaur vertebrae and ribs has been discovered, but its significance has not yet been determined.

WATER

Surface Water

The WSA lies in a tributary watershed (refer to the glossary) of the Rio Salado which flows into the Jemez River and ultimately into the Rio Grande north of Bernalillo. It is considered part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral and are commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout the year, but volumes vary enormously, depending mainly on season. Peaks commonly occur during the summer and early fall months, which coincide with the summer rainy season from July through September. During this period, afternoon thunderstorms may generate tremendous volumes of runoff. Comparison of rainfall data with discharge data for the summer rainy season shows that up to 99 percent of the annual discharge may occur during this period (Craig 1980).

Figure 1

**Stratigraphic Section,
Cabezon, Chamisa, Empedrado,
Ignacio Chavez, La Lena, and Ojito Wilderness Study Areas**

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER		LITHOLOGY	
CENOZOIC	QUATERNARY		ALLUVIUM			
	TERTIARY		PEDIMENT			
			SANTA FE			
	CRETACEOUS	MESAVERDE	PICTURED CLIFFS			
			LEWIS			
			CLIFF HOUSE			
			MENEFEE			
			POINT LOOKOUT			
			CREVASSE CANYON			
	JURASSIC	MORRISON FORMATION	BRUSHY BASIN			
			WESTWATER CANYON			
			RECAPTURE			
		SAN RAFAEL	BLUFF			
			SUMMERVILLE			
			TODILTO			
ENTRADA						
MESOZOIC		TRIASSIC	CHINLE FORMATION	UNNAMED SILTSTONE		
				PETRIFIED FOREST		
	POLEO SANDSTONE LENTIL					
	SALITRAL SHALE TONGUE					
	AGUA ZARCA					
	PERMIAN		SAN ANDRES			
			GLORIETA			
			YESO			
			ABO			
PALEOZOIC	PENNSYLVANIAN	MAGDA- LENA	MADERA			
	SANDIA					
	MISSISSIPPIAN		ARROYO PENASCO			
	PRECAMBRIAN		PRECAMBRIAN			
PRE- CAM- BRIAN	PRECAMBRIAN		PRECAMBRIAN			

Average annual water yields from the area fall between 0.1 and 0.5 inches (.25 inches average or 2,645 acre feet per year). Yields vary considerably from one year to the next.

Ground Water

The Ojito WSA lies within the Rio Grande - State declared underground water basin. One known undeveloped water well is located within the WSA. Several springs also exist.

SOILS

Soils in the Ojito WSA are generally unsuitable for successful application of management practices such as range reseeding or earthen pond construction. They are moderately to strongly alkaline, which limits vegetation composition and productivity. All soils are highly susceptible to water erosion, and much of WSA area is undergoing accelerated soil loss.

TABLE 1
SOILS, OJITO WSA

*Unit	Soils Type	Percent Slopes	Acres
011	Travessilla - Shingle, eroded-rock outcrop complex	-	1,621.8
060	Shingle Complex	3-25	3.1
080	Billings Variant silty clay loam	0-5	67.6
110	Rock outcrop-Gypsum land complex	5-40	354.7
111	Rock outcrop-Ordents complex	-	7,112.6
130	Sheppard Variant- Unnamed 13 association	0-5	9.0
140	Penistaja - Bond Association	-	1,067.0
170	Kim Loam	3-8	1,656.3

*(Unit numbers correlate to soils map on file in the Rio Puerco Resource Area).

VEGETATION

Table 2 summarizes the vegetation located in the Ojito WSA. Refer to Map C for further clarification.

Threatened and Endangered Species

Ojito WSA offers a high potential for rare plant occurrences. In addition to its high relief, it has extensive outcroppings of Todilito gypsum and a variety of Jurassic sandstones. Together, these elements afford a broad spectrum of habitats.

The Todilito gypsum outcroppings are the only known substrate for Bigelow four o'clock Abronia bigelovii (Bigelow verbena-wildflower). A healthy and extensive population of this species was located in the WSA. Intermingled with A. bigelovii were considerable numbers of Selinocarpus lanceolatus (Moonpod-wildflower) and Erigeron pulcherrimus var. pulcherrimus (Fleabane-wildflower). A small population of blue gramma cactus Pediocactus papyracanthus was also found growing adjacent to and intermingled with clumps of Muhlenbergia pungens (Sandhill Muhly-grass) (Knight 1982).

The gypsum outcroppings of the WSA are confined to the eastern edge and northeast corner. The western side of the WSA is dominated by mesa tops and rimrock. Knight (1982) found scattered populations of New Mexico Kentrophyta Astragalus kentrophyta var. neomexicana (New Mexico kentrophyta-wildflower) in these areas. This spiny little milkvetch is found in the extensive sandy pockets that occur throughout the broken sandstone bluffs.

WILDLIFE

Two ecotypes provide habitat for wildlife in the Ojito WSA, the grama-galleta ecotype and the juniper-pinyon ecotype. These are described in Table 2, Ojito Vegetation.

The U.S. Forest Service's 1982 data base lists 131 vertebrate species possibly found in the grama-galleta vegetative type in Sandoval County. This list includes 7 species of amphibians, 65 of birds, 50 of mammals, and 19 of reptiles. In the juniper-pinyon ecotype in Sandoval County, 137 vertebrate species including 3 species of amphibians, 65 of birds, 50 of mammals, and 19 of reptiles possibly occur. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Albuquerque District).

A number of bluffs and mesa edges in the WSA provide excellent nesting habitat for raptors (birds of prey), swallows, and swifts. Several stock ponds are present to provide resting areas for migrating waterfowl. Scaled quail and mourning doves inhabit the brushy draws and rocky wooded hillsides. A few mule deer occupy the juniper-pinyon ecotype, and a small band of antelope range into the northwest corner of the WSA.

Other wildlife common to the WSA include coyote, fox, rabbit, horned lark, raven, and kestrel.

TABLE 2

VEGETATION, QUITO WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grana-galleta steppe	3	N, E, S	20	8.51	fair-good	Galleta grass, shadscale and alkali sacaton	15	525	Sideoats grama, Indian ricegrass, black grama, and NM feathergrass	060-Shingle Complex
2	Grana-galleta steppe	3	N, E	20	6.22	fair	Galleta grass, broom snake-weed, blue grama	20	450	Blue grama, Indian ricegrass, bottlebrush squirreltail, four-wing saltbush	070-Las Lucas Unnamed 07B Association
3	Grana-galleta steppe	1	E, S and nearly flat	36	5.77	poor-good	Four-wing saltbush, Alkali sacaton, galleta grass	20	2,500	Alkali sacaton, blue grama, galleta grass, four-wing saltbush	080-Billings Variant Silty Clay Loam
4	Grana-galleta steppe	3	N, S, W,	19	5.85	fair	Galleta grass, broom snake-weed, yellow-flowered prickly pear	20	450	Black grama, blue grama, galleta grass, Indian ricegrass	140-Penistaja Bond Association
5	Juniper-pinyon woodland	4	N, S, W and nearly flat	30	10.27	fair	One-seed juniper, galleta grass, alkali sacaton	24	500	Sideoats grama, blue grama, little bluestem, NM feathergrass	111-Rock Outcrop Orthents Complex

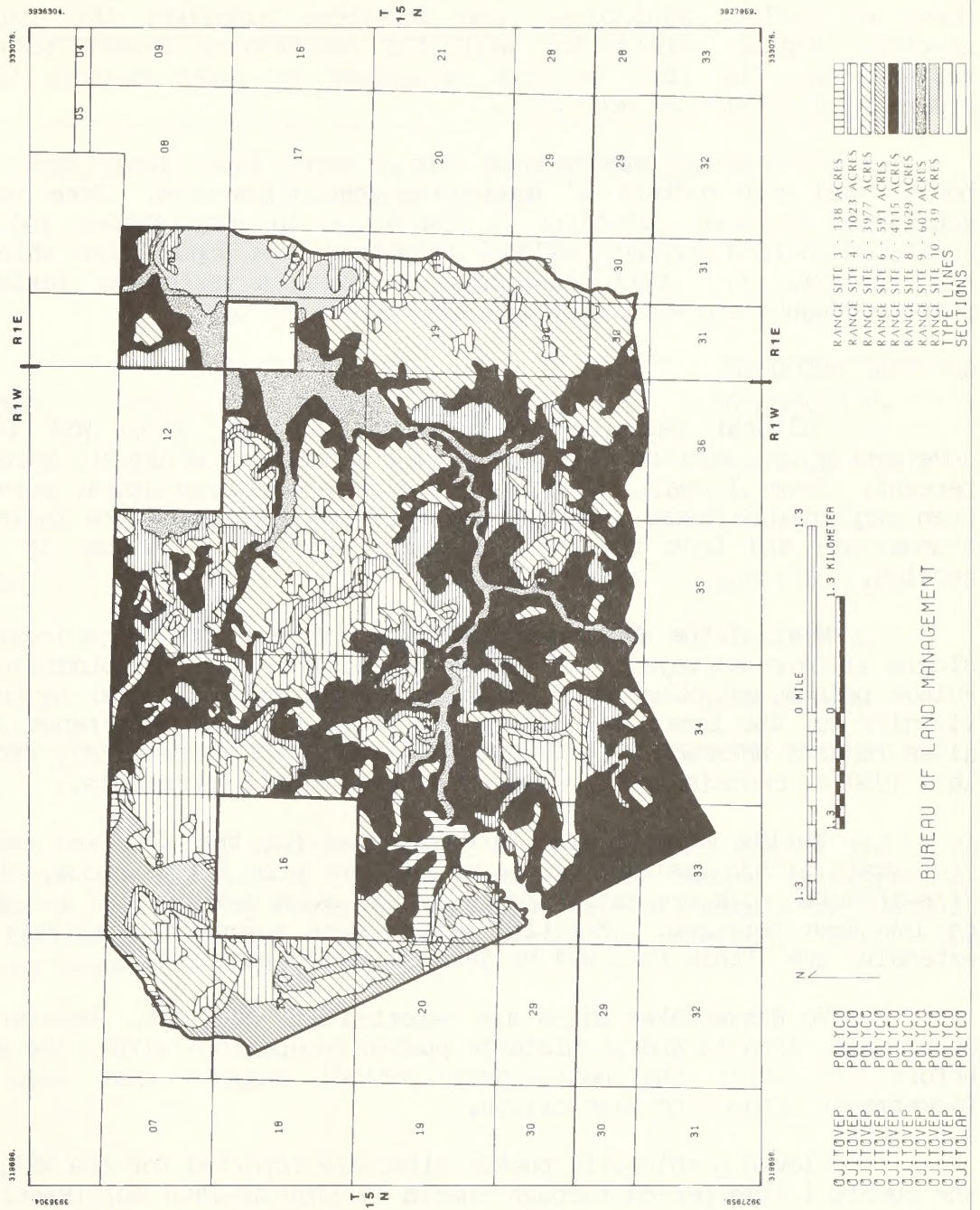
TABLE 2 (continued)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
6	Grama-galletta steppe	3	N and S	17	7.02	fair	Galletta grass, broom snake-weed, winterfat	15	475	Sideoats grama, Indian rice-grass, NM feather-grass, galletta grass, Bigelow sage	011-Travel-silla-Shingle-Eroded Rock Outcrop Complex
7	Grama-galletta steppe	3	N, E, S, and nearly flat	19	6.59	fair	Galletta grass, broom snake-weed, alkali sacaton	20	475	Sideoats grama, blue grama, black grama, galletta grass	111-Rock Outcrop-Orthents Complex
8	Juniper-pinyon woodland	22	N, S and nearly flat	21	31.26	poor	One-seed juniper, shade-scale and black grama	20	80	Indian rice-grass, blue grama, true mountain mahogany, Cliff Rose, shrub live oak	010-Travel-silla-Shingle-Rock Outcrop Complex
9	Grama-galletta steppe	less than 1	N, E, S and nearly flat	21	4.68	fair	Fourwing saltbush, alkali sacaton, blue grama	45	2,500	Vine mesquite, alkali sacaton, blue grama, fourwing saltbush	170-Kin Loam
10	Juniper-pinyon woodland	18	N, S, W	16	25.45	poor	One-seed juniper, galletta grass, alkali sacaton	20	80	Indian rice-grass, blue grama, true mountain mahogany, Cliff rose, shrub live oak	110-Rock Outcrop-Gypsum Land Complex

TABLE 2 (concluded)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
11	Grama-galleta steppe	2	N	13	17.50	poor-fair	Alkali sacaton, sand dropseed, fourwing salt-bush	15	475	Indian rice-grass, blue grama, sand dropseed, Spike dropseed, fourwing salt-bush	120-Sheppard Variant Loamy Sand
12	Grama-galleta steppe	1	N and nearly flat	24	11.09	fair	Shadscale, fourwing salt-bush, alkali sacaton	15	525	Alkali sacaton, blue grama, galleta grass fourwing salt-bush	130-Sheppard Variant Unnamed 13 Association

VEGETATION, OJITO WSA



VISUAL RESOURCES

The eastern portion of the WSA incorporates the Querencia Arroyo which meanders from north to south and is bounded by a steep-sided canyon. High rocky bluffs mount beyond the canyon to the east and west framing distant views of Cabezon Peak, Mesa Prieta, and the Sandia Mountain Range. Red-toned bluffs, pale limestone mesa edges and dark green junipers counterpoint the blue skies. Bands of shales, sandstones, and limestone highlight the canyon walls; a colorful display contrasting with the surrounding desert tans. Extending westward are the rock terraces dissected by rocky canyons that climb to expansive plateaus and mesa tops.

Retreating escarpments that step back from the uplands, are honeycombed with pockets of impressive scenic features. Some pockets contain sculptured badland formations of sandstone in many shapes and sizes. Other sheltered pockets contain residual ponderosa pine populations which are rare in this environment. Still other pockets reveal a variety of features including petrified wood, and multi-colored rock layers.

CULTURAL RESOURCES

Cultural resource inventory within the Ojito WSA is limited to coverage of one section (640 acres) out of a total of 11,919 acres, or about 5 percent. Several small BLM surveys and energy-related linear surveys have also been conducted. These suggest that well over 500 sites are located within WSA boundaries, and that the density would average in excess of 21 sites per section.

Most of the WSA's recorded sites (27 out of 43) are located within the single section surveyed. Of these sites, none are Paleoindian. Reports of Folsom points and other Paleoindian materials have occurred in the general WSA vicinity but the location patterns and probability of occurrence of Paleoindian sites remains unknown. One additional site (Ojito Dune Site), excavated in the late 1960's, contains both Paleoindian and Archaic components.

Twelve Archaic sites are reported for the WSA, and range in nature from small lithic scatters to large scatters with ground stone, cists, ash, and fire-affected rock present. Known Archaic sites are located in sand dune areas on low mesa terraces. Existing survey data suggests relatively frequent and extensive use within this WSA by Archaic period populations.

No Basketmaker sites are reported for this WSA. However, indications of sizeable Archaic and prehistoric pueblo occupations within the WSA (occurring before and after the Basketmaker period) suggest that some evidence of Basketmaker occupation also exists.

Eleven prehistoric pueblo sites are reported for the WSA, ranging from the Pueblo I time period through Pueblo IV (750 AD-1400 AD) (Refer to Table 3). Pueblo sites in this general region tend to be located on mesa tops and mesa terraces; they range in nature from lithic/sherd scatters to small pueblos of 30 or more rooms.

Two Navajo sites are recorded within the Ojito WSA. Additional Navajo sites can be anticipated for this WSA, but far fewer in total numbers than sites from earlier time periods.

Historic use of the middle Rio Puerco drainage (and therefore the WSA) has been moderately extensive. Spanish settlers entered the valley before the 18th century, and remnants of a Hispanic population remain today. Seven historic sites are known within the WSA, of which six are habitational. One is a livestock corral. The recorded sites show a location preference in drainage bottoms and lower canyon slopes. Projected site densities for historic sites should be high for these locations within this WSA.

TABLE 3

ARCHAEOLOGICAL SEQUENCE FOR RIO PUERCO RESOURCE AREA
(After Dittert, 1959)

Culture Period	Time	Culture Period	Time
Paleoindian	>250 B.C.	Pueblo II	870-950 A.D.
Archaic	>250 B.C.	Pueblo II	950-1100 A.D.
	700 A.D.	Pueblo III	1100-1200 A.D.
	(500-700 BMIII)		
Basketmaker	700 A.D.	Pueblo III-IV	1200-1400 A.D.
	800 A.D.	Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

AIR QUALITY

Ambient air quality monitoring data for the general area of the Ojito WSA was collected during 1975-76 by the State of New Mexico Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable or salable minerals is occurring within the boundaries of the WSA. No recordation of mining claims has been made. Though 14 oil and gas leases have been issued, no producing wells have been completed and the level of exploration activity has been low.

Table 4 indicates that the highest potential for development is associated with uranium in the Morrison Formation, gypsum in the Todilto Formation, sand and gravel and petrified wood. The geologic environment, inferred geologic processes, reported mineral occurrences and known mines or deposits indicate a high favorability for the accumulation of these mineral resources. Even though the favorability is high, the absence of mining claims argues for only a moderate potential for development.

The development of sand and gravel and petrified wood is also questionable since these salable resources are wide-spread and are more readily accessible in other areas. All of the other listed commodities have only a low to moderate potential for development.

WATERSHED

The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by overgrazing in the late 1800's and early 1900's by both sheep and cattle. This past grazing use has resulted in extensive sheet, rill, and gully erosion in all areas except the steep slopes of mesas. The WSA is especially vulnerable to upland erosion because of sparse vegetation, relatively steep slopes and the occurrence of violent thunderstorms. Leopold (1966) found that upland sheet erosion was the most significant source of sediment in a semi-arid area of New Mexico during a six-year period.

LIVESTOCK GRAZING

Four grazing allotments are located within this WSA. (Refer to Map D).

Table 5 displays grazing information pertaining to these four allotments.

TABLE 4
MINERAL RESOURCE ASSESSMENT, OJITO WSA

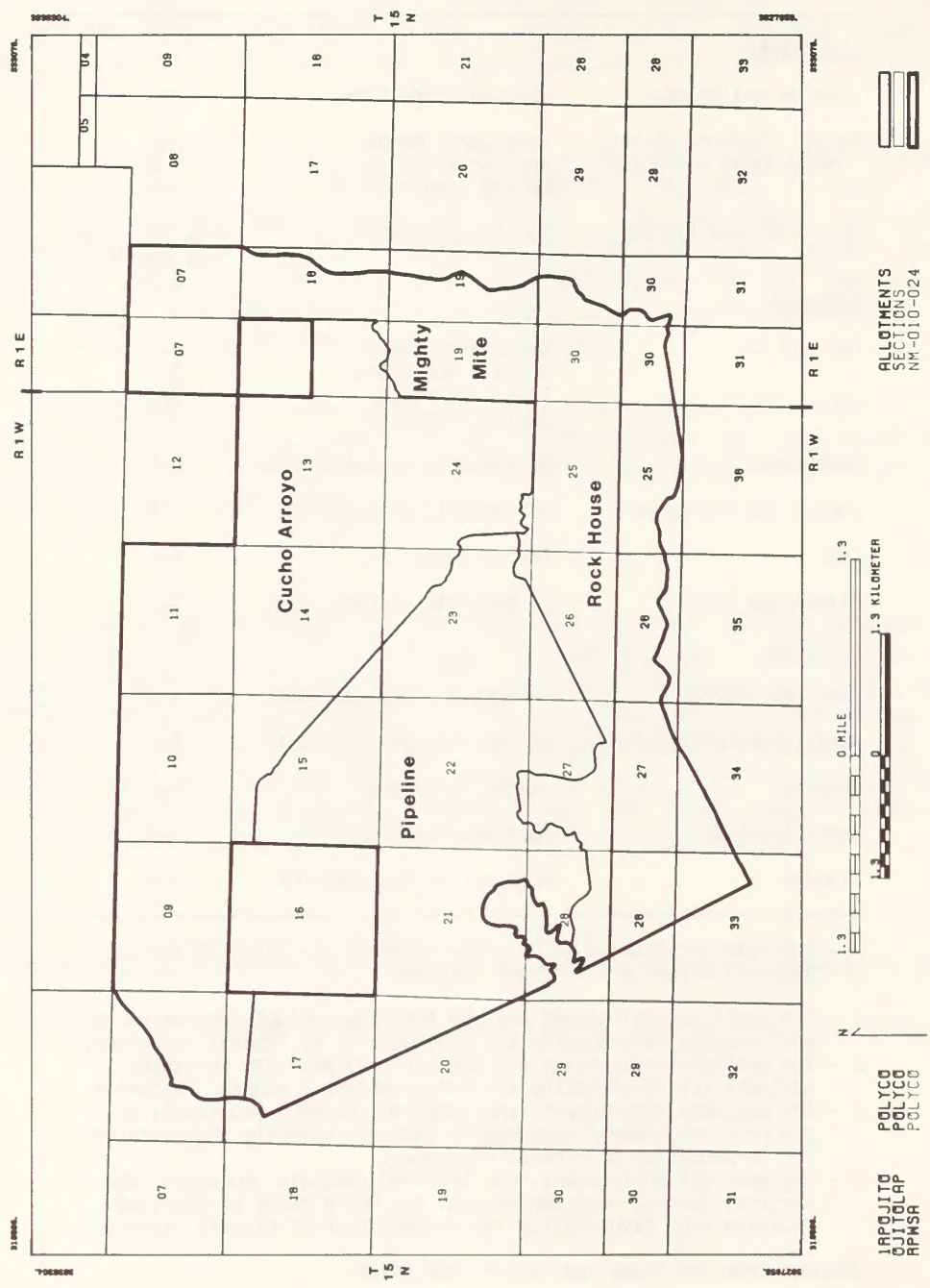
Mineral Commodity	Geologic Unit	Development Potential
<u>Locatables</u>		
Uranium and Thorium	Morrison Formation	4-D
Metals (Copper, Silver Molybdenum and Gold)	Agua Zarca Member	3-B
	Abo Formation	3-B
	Madera Formation	3-B
Non-Metallics (Gypsum)	Tbdilto Formation	4-C, NE corner 3-C, remainder
<u>Leasables</u>		
Oil and Gas	Sandia Formation	2-C
	Entrada Formation	2-C
	Dakota Formation	2-C
	Gallup Formation	2-C
Geothermal	No Specific Geologic Unit	2-A
Sodium and Potassium	No Specific Geologic Unit	2-A
Coal	Dakota Formation	2-A
Bituminous Rock	No Specific Geologic Unit	3-C
<u>Salables</u>		
Sand and Gravel	No Specific Geologic Unit	4-C
Clay (Common Varieties)	No Specific Geologic Unit	3-A
Humates	Dakota Formation	3-B
Petrified Wood	Morrison Formation	4-B
Cinders	No Specific Geologic Unit	1-B

A - Insufficient Data; B - Indirect Evidence; C - Direct Evidence
D - Abundant Direct and Indirect Evidence

- 1 - The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.
- 2 - The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.
- 3 - The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.
- 4 - The geologic environment, the inferred geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

Adapted from GEM Study and Turner, BLM, 1982.

RANGE ALLOTMENTS, OJITO WSA



MAP D

BUREAU OF LAND MANAGEMENT

TABLE 5

RANGE ALLOTMENT INFORMATION, OJITO WSA

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Numbers	Season of Use
Mighty Mite	0058	1,099	987	1	21 head	6 months (12/1-5/31)
Cucho Arroyo	0057	6,429	4,360	2	110 head	6 months (12/1-5/31)
Pipeline	0056	13,611	3,126	1	107 head	Yearlong
Rock House	0060	14,712	2,427	2	106 head	Yearlong

Mighty Mite Allotment (#0058)

One water trough and approximately 100 yards of pipeline are planned for construction in the WSA in order to implement the Allotment Management Plan for this allotment.

Cucho Arroyo (#0057)

To implement the Allotment Management Plan, five water troughs and approximately 5 miles of pipeline are proposed to be constructed within the WSA.

The pipeline network will be composed of two separate spurs. Before entering the Cucho Arroyo Allotment, the southern spur would pass through portions of the WSA located on two other grazing allotments. It would then continue through the Chucho Arroyo Allotment and would provide water service to a trough on the Mighty Mite Allotment.

The second pipeline spur would pass through a portion of the Ojito WSA on the Pipeline Allotment before entering the Cucho Arroyo Allotment from the west. This spur would be approximately 2 1/4 miles long and would provide water to two troughs on the Chucho Arroyo Allotment. The spur would continue through this allotment to a trough located in the WSA portion of the Pipeline Allotment.

Pipeline Allotment (#0056)

To implement the Allotment Management Plan, two water troughs and approximately 1 1/4 miles of pipeline are proposed to be constructed inside the WSA. The pipeline system would be composed of two spurs. The first spur would be approximately a quarter mile long and provide water to one trough. This spur would enter the allotment from the north and would be an extension of the West Cucho Arroyo Allotment spur. The second spur would be approximately one mile

long and would provide water to one trough. This spur would enter from the south into the allotment from a portion of the WSA in the Rock House Allotment. This spur would continue through the allotment and provide to the southern Cucho Arroyo Allotment and Mighty Mite Allotment spurs.

Upon completion of these range improvements, this allotment and another to the west would be combined to form a community grazing allotment. This combination would facilitate the four-pasture rest-rotation system proposed in the BLM's 1978 Proposed Rio Puerco Livestock Grazing Management Program Environmental Statement. As a result of this combination, the number of livestock authorized within the WSA would be increased to 136. However, the length of time the livestock would graze in the WSA would be decreased. In addition, the grazing system would provide for periodic yearlong rest for the allotment acreage located within the WSA.

Rock House Allotment (#0060)

To implement the Allotment Management Plan on this allotment, approximately a 1/2 mile of pipeline and one water trough are proposed to be constructed in the WSA. This pipeline spur would continue through the allotment and would provide water to the Pipeline, Cucho Arroyo and Mighty Mite Allotments.

FOREST PRODUCTS

Pinyon and juniper are the two major tree species that grow in the WSA. They are not commercially usable because of their generally low stand densities. Little potential exists for use for domestic firewood. However, some limited illegal cutting for firewood continues to be a problem in Ojito WSA, particularly along its eastern and southern boundary.

The WSA contains a few residual ponderosa pine trees located in several small "pockets". These are not considered commercially usable.

RECREATION

The BLM's Recreation Information System (RIS) utilized a quantity evaluation system to describe the existing recreation environment. This evaluation rates the quality of experience a visitor can expect while participating in a specific activity. The Ojito WSA was divided into two RIS units rated for the five activities shown in Table 6.

TABLE 6

RECREATION QUALITY EVALUATION, OJITO WSA

Activity	Mineral Springs Unit	Bernalillo Arroyo Unit	Key Factors
ORV use	Medium	high	Soil, size, hazards, usability
Sightseeing (Scenery)	high	low	Landform, color, water, vegetation, uniqueness, intrusions
Sightseeing (Geological)	high	-	Extent, representative type, form, color, frequency of occurrence
Big Game Hunting	low	-	Game population, ease of movement, shooting opportunity
Primitive Values	high	-	Scenic qualities, size, intrusions, wildlife, fisheries, water, usability, uniqueness

Southwest Off-Road Enterprises of Albuquerque has sponsored the "Oh My God 100" motorcycle race in and around the WSA seven times since 1975. Approximately one-half of the course follows WSA boundary roads and the remaining portions have run along existing trails and arroyo bottoms in the WSA. The Recreation Management Area (RMA) plan lists 708 visitor days and 850 visits for the area in FY 1981, most of which occurred on the day of the race (refer to Figure 2).

The WSA offers opportunities for scenic and geological sightseeing, rockhounding, horseback riding, photography, hiking and camping. Random ORV use associated with hunting occurs in the WSA. A small group of artists, photographers, and nature enthusiasts have utilized the Ojito WSA consistently since the mid 1950's.

The WSA lies within the New Mexico state planning district 3. Recreation demand in the District is indicated in a study completed by the University of New Mexico's Bureau of Business and Economic Research (1975). Assessing non-developed recreation demand on a regional level is an indicator of the type of activities that an area like the WSA could support. (Refer to Table 7). This data is useful for relative comparison purposes as it enables the reader to grasp a general picture of recreation use levels in the area.

FIGURE #2 NUMBER OF PARTICIPANTS PER RACE DATE

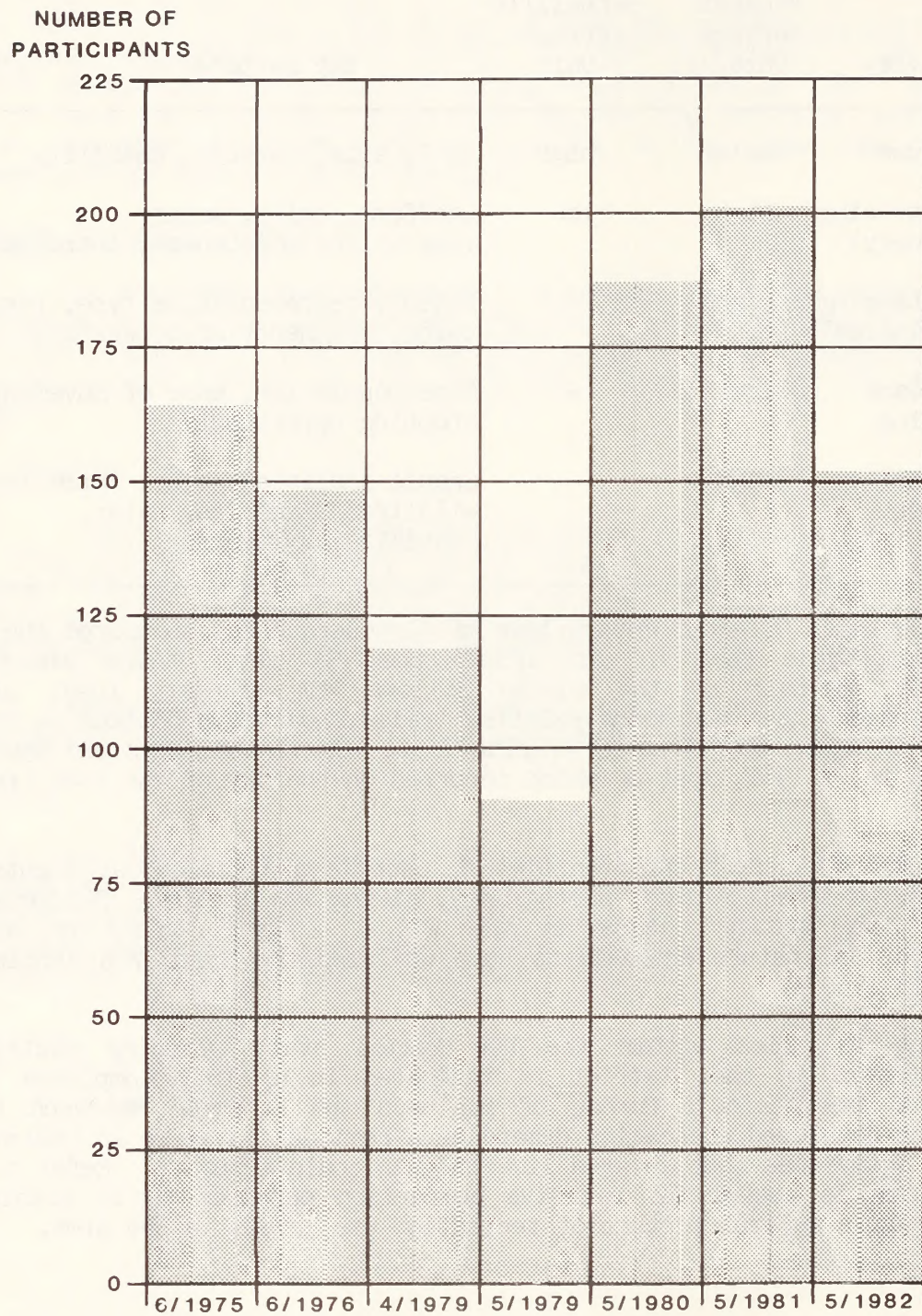


TABLE 7

RECREATION DEMAND - OJITO WSA
(based on visitor use days)

Activity	1975	1980	1985	1990
Pleasure Walking	7,487,332	8,448,000	9,209,000	10,002,000
Jogging	4,256,140	4,802,000	5,235,000	5,686,000
Park Visits	1,945,664	2,190,000	2,388,000	2,593,000
Birdwatching	1,394,103	1,573,000	1,714,000	1,862,000
Horseback Riding	1,249,915	1,410,000	1,538,000	1,669,000
Photography/Painting	1,051,006	1,186,000	1,293,000	1,404,000
Sightseeing	925,059	1,043,000	1,138,000	1,236,000
Picnicking	786,083	887,000	967,000	1,050,000
Hiking	427,351	482,000	526,000	571,000
Rock Hounding	424,745	479,000	522,000	567,000
Visiting Historical Sites	422,573	477,000	520,000	564,000
Camping	394,444	445,000	485,000	527,000
Small Game Hunting	247,551	279,000	304,000	331,000
Backpacking	111,180	125,000	137,000	148,000
Big Game Hunting	98,151	111,000	121,000	131,000

EDUCATION/RESEARCH

The diversity of special features contained within the Ojito WSA, along with its close proximity to two of the largest population centers in New Mexico (Albuquerque and Santa Fe), make this WSA an ideal "living laboratory". Special features include wildlife, historic, prehistoric, paleontologic, geologic and scenic elements as well as threatened and endangered vegetation. (Refer to Section 4, Wilderness Criteria; Special Features). All of these values are available for study in a natural setting and lend themselves to interpretation to any age or development level. The WSA presently serves one Albuquerque High School class as an on-site laboratory for its semester study of environmental issues.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the area for firewood gathering and hunting. Some use continues presently.

The Jemez Snake Catching Clan has traditionally collected snakes in the WSA, but it is not known if this use continues.

Recent survey near the WSA and interviews with officials of the Jemez, Zia, Santa Ana Pueblos and the Canyoncito Navajo Reservation generally concede that many places of religious significance exist in and near the Ojito WSA, but that specific site locations are not known to the lay members of the tribes because only tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature.

Traditional uses within the boundaries of this WSA by Native American populations are expected to continue.

REALTY ACTIONS

The western boundary of the Ojito WSA lies within a proposed 500-kV transmission line corridor that would serve the proposed New Mexico Generating Station (NMGS). However, present information indicates that this transmission line could be accommodated entirely outside of the present boundaries of the WSA.

WILDLIFE

Current use is discussed in Section 2. The Ojito WSA is included in the upper Rio Puerco Wildlife Habitat Management Plan. Several wildlife water units (associated with proposed Cabezon pipeline construction) with exclosure fences are planned for construction, and some of the existing stock tanks are scheduled for development for waterfowl use. This would include cleaning and sealing of the tanks and protective fencing of shoreline vegetation.

Human use of the wildlife resource in the WSA includes predator calling, trapping, bird hunting, and observation incidental to hiking.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work in the Ojito WSA is documented in the Wilderness Intensive Inventory (USDI, BLM 1980). In summary, this WSA includes a fenceline network, 11 earthen dams 9 two-track ways, evidence of illegal woodcutting, and scattered litter. It is important to note that the BLM considers the cumulative effect of these imprints upon the entire WSA when assessing naturalness. This is a function of the size of the unit and the number and distribution of the impacts.

The dams are widely scattered throughout the WSA and are well-buffered by the surrounding topographic relief and vegetative screening. Several are silted in. Ways are maintained solely by vehicular travel and would return to a natural condition if use were discontinued. Several ways along the east boundary have returned to an almost natural condition since initially inventoried. Evidence of illegal woodcutting and litter are visible in the southeastern portion of the WSA, concentrated along a two-track route. Little recent cutting has occurred.

As a whole, the WSA clearly has been affected primarily by the forces of nature, and thus is assessed as exhibiting the wilderness characteristic of naturalness. Considering Ojito's close proximity to the populations of Albuquerque and Santa Fe, its near pristine condition is a particularly outstanding feature.

Solitude

The BLM considers solitude as the state of being alone or removed from habitations; isolation. One may experience solitude in the Ojito WSA by wandering through the numerous steep-sided canyons, sandy arroyos, and rough, rocky terrain found throughout. This rugged topographic screening enhances opportunities for solitude by protecting users from the sights and sounds of others. Ojito WSA possesses ample outstanding opportunities for a person to experience solitude.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality. The Ojito WSA contains the opportunity for a wide diversity of outstanding primitive recreation activities.

The varied landscape provides outstanding photographic and sightseeing potential. Highlights include large-mouth canyons, wide-cut arroyos, colorful rocky bluffs, flat highlands, and a viewscape of distant mountain ranges including the Sandias. (Refer to Section 2, Visual). Sightseeing opportunities

also exist associated with the historic and prehistoric sites that occur in abundance. (Refer to Section 2, Cultural). Hikers, campers, backpackers and rockhounds are accommodated by the variety of terrain offered throughout the WSA. Opportunities for good bird hunting exist in Ojito. (Refer to Section 2, Wildlife).

Special Features

Overall, the Ojito WSA has a particularly high density of and wide variety of special features. Although wildlife is not abundant, a diversity of species is present. (Refer to Section 2, Wildlife). Two plant species occur in the WSA that are on the State of New Mexico State Heritage list of species of concern.

These species include Abronia bigeloi (Bigelow verbena-wildflower) which was considered by W. C. Martin to be an endangered taxa in New Mexico. The second species, is Pediocactus papyracanthus (blue grama cactus), found just to the north and east of the eastern part of the WSA. This cactus is found growing in clumps of blue grama and black grama in swales, and is currently a formal candidate for listing by the federal government as threatened. Others include Selinocarpus lanceolatus (Moonpod-wildflower), Erigeron pulcherrimus (Fleabane-wildflower) (refer to Section 2, Existing Resources, Vegetation).

As noted previously, the cultural resource density within this WSA is particularly high, and includes Archaic, prehistoric and historic sites. Paleontological sites have also been found, but their full significance has not been determined as yet because excavation has not occurred. Further study is presently taking place. As highlighted previously, the diversity in terrain provides varied and striking visual features.

Combined, the special features in the Ojito WSA provide exceptional scientific/educational potential. (Refer to Section 3, Existing and Potential Uses; Education/Research).

Multiple Resource Benefits

The Ojito WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM.

A more detailed discussion of multiple resource benefits for the Ojito WSA may be found under the discussion of the impacts of the All Wilderness Alternative (refer to Section 6).

Diversity in the National Wilderness Preservation System

Ecosystems Present

The Ojito WSA, according to Robert G. Bailey (1980) falls under the Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic.

ECOTYPES, OJITO WSA



BUREAU OF LAND MANAGEMENT

The two A. W. Kuchler types (1964) found in the WSA are described as follows:

Grana-Galleta Steppe. Total acres in WSA 5,655.5; 48 percent of the WSA.

Jiniper-Pinyon Woodland. Total acres in WSA 6,263.2; 52 percent of the WSA.

(Refer to Section 2, Existing Resources; Vegetation, for a description of each ecotypes components.)

Map E displays these ecosystems. Vegetation Map C, breaks each ecosystem into more refined site categories which are narrated in Table 2 (Vegetation-Ojito WSA) located in Section 2, Existing Resources; Vegetation.

Distance to Population Center

The Ojito WSA is within one day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census as being a Standard Metropolitan Statistical Area (SMSA,--refer to the Glossary). It is within a two hour drive from the cities of Albuquerque or Santa Fe, two of the largest population centers in New Mexico.

MANAGEABILITY

To be recommended as suitable, the Ojito WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as state and private inholdings, valid existing rights, mineral leases, rights-of-way, topography, and the overall land status pattern.

Valid existing rights in the Ojito WSA are accorded the livestock operators and include necessary access for ranch operators and the maintenance needs of "grandfathered" range improvements. Reasonable access is also guaranteed to state and private inholdings. These access needs would result in the occurrence of generally low levels of use incompatible with wilderness.

Manageability could be enhanced by removing approximately 1 and 1/4 sections located in the northeast portion of the WSA (refer to Map A). This acreage is surrounded on three sides by non-federal land and is contiguous on the south with a 1/4-section of private land. Access to the private inholding crosses this northeastern parcel. Redefining the WSA boundary as exhibited on Map A, would eliminate both the 1/4-section of private inholdings and the need to cross Ojito WSA to gain access.

Manageability could be further enhanced if the aquisition of State Section 16 (T. 15 N., R. 1 W.) were pursued. This section exhibits wilderness values similar to the Ojito WSA, and is used predominately for grazing (Refer to Map A).

SECTION 5

PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considerable public input obtained by a variety of methods including mass mailings, public meetings, open houses and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Considerable interest in the the management status of the Ojito WSA has been expressed by the public. The WSA's close proximity to the cities of Albuquerque and Santa Fe and its resultant ease of access for such a large percentage of New Mexico's population was pointed out. Ojito's wide variety of special features, natural character, and opportunities for solitude and primitive and unconfined recreation were also noted.

Opponents of wilderness designation for the Ojito WSA discussed the effect of excluding the WSA from possible future mineral exploration and development, the presence of human impacts, and possible limitations on ranch operations. (Refer to the public response summary for the wilderness intensive inventory, appendix 1).

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the Ojito WSA: All Wilderness, Amended Boundaries, and No Action (manage under the existing plan).

ALL WILDERNESS ALTERNATIVE

Under the All Wilderness Alternative, the entire 11,919 acres of public land within the Ojito WSA would be recommended as suitable for wilderness designation.

On any acreage designated as wilderness, the existing and potential uses (refer to Section 3,) would be regulated by the BLM's Wilderness Management Policy (1981).

This alternative would not have significant impacts on air quality and realty actions in the Ojito WSA. For this reason, they are not included in the following discussion.

Impacts to Minerals

Development of locatable minerals within the Ojito WSA would be affected by wilderness designation to the extent that mining claims could not be located after January 1, 1984, and operations conducted after December 31, 1983, may include only development work, extraction and patenting.

Discretionary leasing and minerals material sales would most probably cease following wilderness designation; only those leases in effect before designation would be allowed to continue. As of January 1, 1984, all of the minerals under lands designated as wilderness would be withdrawn from disposition under all laws pertaining to mineral leasing.

The net effect of these restrictions would be to significantly lower the potential for development of all locatable and leasable minerals that may occur within the WSA. Although there is a moderate favorability for the occurrence of copper, silver molybdenum, gold, uranium, thorium, gypsum, bituminous rock, sand, gravel, clay, humates and petrified wood, wilderness designation could curtail exploration and prevent possible future extraction.

Given today's economic conditions, there is little demand for the extraction of copper, silver, uranium, thorium, bituminous rock, molybdenum, gold or clay, from the Ojito WSA's reserves.

Although gypsum, sand, gravel and humates occur throughout northern New Mexico, any of these resources located in the Ojito WSA would be considered economically attractive, regionally. This occurs because extraction near the source of utilization is essential to achieving an acceptable profit margin.

[If the Ojito WSA is recommended suitable for wilderness designation, additional surveys will be done by the United States Geologic Survey (USGS) and the Bureau of Mines (BM).]

Impacts to Other Resources and Uses

Soils, Watershed and Vegetation

Restrictions on surface-disturbing and mechanized activities would provide long-term protection for the existing soils, watershed, and vegetation, including threatened and endangered plant species (refer to Section 2, Vegetation).

Wildlife

Restrictions on surface-disturbing activities and mechanized activities would provide protection for wildlife habitat. Reduced vehicle access should reduce both legal and illegal furbearer harvest.

Restraints on construction of fence exclosures could occur. Water development associated with the proposed pipeline would most likely not occur, which could preclude the expansion of the existing wildlife resource. (Refer to Section 3, Existing and Potential Use)

Visual Resources

Existing visual resources described in Section 2, would be protected; only minor modifications in the basic elements of the landscape may occur as a result of natural ecological changes and very limited management activity would be permitted.

Cultural

Site condition monitoring associated with surveillance could prove beneficial because over 80 percent of the Rio Puerco Resource Area's known sites suffer from significant natural deterioration. It is assumed that increased monitoring would take place under Wilderness designation. This would increase the ability to detect, and if warranted, to arrest serious deterioration at relatively early stages.

The wilderness management policy allows the natural decay of sites. Excavation and stabilization may be permitted on a case-by-case basis where the State Director determines that the project would not degrade the overall wilderness character and when such activity was needed to preserve the particular cultural resource. The increased public awareness of wilderness and thus possible increased visitation could increase vandalism if proper visitor management tools were not employed.

Limited surface-disturbing activities would be allowed under wilderness designation. This could limit the destruction of the Ojito WSA's abundant cultural sites through other than natural causes.

Livestock Grazing

Livestock operations in the Ojito WSA would be affected by wilderness designation. These effects may result from limitations imposed on the maintenance of existing range improvements and the construction of some proposed improvements (refer to Section 3, Existing and Potential Uses). Although grazing is a permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, or location of

improvements may occur in order to protect wilderness characteristics. The pipeline system proposed within the Ojito WSA would not likely be constructed. This would eliminate 26 additional AUM's as presently planned. The federal government would not spend approximately \$77,000 constructing the pipeline and the allottees would not be responsible for approximately \$2,946 of annual maintenance.

A major impact to these allottees holding permits in the Ojito WSA could occur because of limitations on the use of motorized vehicles in designated wilderness areas. Most of the ranchers grazing livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. These ranchers live in the vicinity of Cuba and Albuquerque, near their primary sources of income.

Therefore, the weekends are the time when most of the ranchers can attend to their grazing allotments, and the pickup truck has become increasingly important as a livestock management tool. Wilderness designation would hinder the effective use of already limited time to tend to weekend ranching operations.

The WSA presently supports 1207 Animal Unit Months (AUMS); the existing levels of livestock operations as well as necessary vehicular access and the maintenance of "grandfathered" range improvements are valid existing rights and would continue under wilderness designation.

Forest Products

It is assumed that increased management attention (such as regular patrol) would occur under wilderness designation and could curtail illegal woodcutting.

Recreation

Recreation activities that require motorized vehicles would be affected, including some hunting and motorcross activity; both are popular activities presently occurring within the Ojito WSA. (refer to Section 3, Existing and Potential Uses).

Wilderness designation would ensure that the present opportunities for primitive and unconfined recreation would be available to meet high regional demands. (Refer to Section 3, Existing and Potential Uses). Although these opportunities do exist outside of the WSA, Ojito provides the natural setting upon which the outstanding recreation quality is dependent.

Education/Research

Wilderness designation would ensure the preservation of the existing "natural laboratory" in the Ojito WSA. (refer to Section 3, Existing and Potential Uses).

Native American Uses

Limitation of vehicular access could limit Native American uses. However, the preservation of solitude and naturalness could enhance these activities, because they are often dependent on specific natural settings.

AMENDED BOUNDARY ALTERNATIVE

Under this alternative, 11,297 acres of public land within the Ojito WSA would be recommended for wilderness designation (refer to Map A). The amended boundary would exclude 622 acres of public land in the northeast portion of the WSA, for the reasons stated previously in Section 4, Wilderness Criteria; Manageability. If the area within the amended boundary is designated wilderness, all existing and potential uses (refer to Section 3, would be managed under the BLM's Wilderness Management Policy (1981).

Impacts to Minerals

Impact to minerals would remain the same as stated in the All Wilderness Alternative.

Impacts to Other Resources and Uses

Impacts to other resources and uses would remain the same as stated in the All Wilderness Alternative. The reduced acreage is not significant enough to impact existing wilderness values.

NO ACTION ALTERNATIVE

"No Action" means that the Ojito WSA would be managed as undesignated multiple use land. The most probable uses of the Ojito WSA if it is not designated as wilderness would be livestock grazing, mineral exploration, and ORV use. Management actions calling for varying degrees of vegetative manipulation, water pipeline development and rangeland improvements have been identified by the wildlife and range programs. Ojito WSA's wilderness characteristics would be subject to increased pressure for mineral exploration and development. (Refer to Section 3, Existing and Potential Uses).

Under the no action alternative the Ojito WSA would be recommended nonsuitable for wilderness designation. Existing and potential uses would continue without regard for the Interim Management Policy and Guidelines for Lands Under Wilderness Review (1979).

The No Action Alternative would not have significant impacts on forest products, air quality, realty actions, range or minerals. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

Mineral exploration and development, increased ORV activity and increased use of motorized vehicles would result in disruption of wildlife habitat, scenery, and vegetation as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to significantly impact naturalness. The fragile resources discussed previously (refer to Section 4, Special Features) would be particularly vulnerable to development-oriented management.

No protective designation has been proposed for the Ojito WSA. The cumulative effect of this lack of a protective designation and the above management practices would be to degrade or eliminate Ojito's wilderness characteristics.

Impacts to Other Resources and Uses

Soils, Watershed, Vegetation

Continued vehicular access and other surface disturbing activities could result in additional ruts and create the potential for reduced watershed quality. This occurrence would also affect soils and vegetation, including threatened and endangered species. (Refer to Section 2, Existing Resources; Vegetation).

Wildlife

Non-wilderness management could result in a significant increase in human activity and thus impact those wildlife species dependent on an unmodified ecosystem. However, a wider range of habitat management actions could occur under this alternative and in the long run, produce a more diverse habitat for wildlife. The No Wilderness Alternative would allow the full implementation of the Rio Puerco Habitat Management Plan by allowing the planned water pipeline and related facilities to be constructed.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface-disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawals and closures, as well as specific site or area cultural resource management plans.

Recreation

Opportunities for primitive recreation would be reduced as discussed under "Impacts to Wilderness Values" above. Primitive and unconfined recreation relies on the resource base of a predominately natural environment. Such as environment would no exist under development-oriented management.

Recreation relying on vehicular travel as well as motorcross use, would continue.

Education and Research

The natural setting supporting the special features discussed in Section 4, Wilderness Criteria, would be subject to increased surface disturbance and vehicular travel. This would considerably degrade Ojito WSA's potential for use as a "living laboratory". (Refer to Section 3, Existing and Potential Uses, Education and Research).

Native American Uses

The natural settings on which those uses are often dependent, would be subject to surface disturbing activities.

RECOMMENDED ACTION

RECOMMENDED ACTION DESCRIPTION

It is recommended to support the Amended Boundary Alternative which recommends 11,297 acres of Ojito WSA's original 11,919 acres as suitable for wilderness designation.

RATIONALE

Ojito WSA contains abundant, high quality wilderness characteristics. The naturalness retained by Ojito is a particularly outstanding feature considering its close proximity to the large population centers of Albuquerque and Santa Fe. The wide variety and high quality of Ojito's special features (refer to Section 4, Wilderness Criteria; Special Features) is a rare occurrence. Preservation of these outstanding values outweighs those other commodities which would be foregone by wilderness designation. These values could not be preserved through another type of protective designation.

Commodities foregone include 26 additional AUM's associated with the planned water pipeline and stock facilities; the development of several wildlife waters; the development of possible gypsum, sand, gravel and humate resources for regional demand; curtailment of any motorcross activity.

CONSISTENCY WITH OTHER PLANS

Several wildlife waters proposed in the Rio Puerco Habitat Management Plan (done in coordination with the New Mexico Department of Game and Fish) would not be developed.

There are no known additional inconsistencies with the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Wilderness Draft Environmental Assessment.

PUBLIC RESPONSE SUMMARY

Unit Number: NM-010-24

Unit Name: Ojito

FAVOR
Wilderness Study*I **S
29 28OPPOSE
Wilderness Designation or
Wilderness Study Status*I **S
4 9

*I	**S	Supporting Reasons
1	1	Meets Size Criterion
1	1	Over 5,000 Acres
1	1	Sufficient Size to be Managed as Wilderness
17	16	Meets Naturalness Criterion
3	1	Insignificant Mining Impacts
18	17	Offers Opportunities for Solitude
15	14	Offers Opportunities for Recreation
15	14	Supplemental Values
9	7	Manageable as Wilderness
9	9	No Supporting Reasons Offered

*I	**S	Supporting Reasons
3	8	Does Not Appear to be Natural
1	1	Range Impacts
1	1	Offers No Opportunities for Solitude
1	1	Offers No Opportunities for Recreation
1	1	No Supporting Reasons Offered

*I **S FORM LETTERS & PETITIONS

2524 2569 Endorsements of Conser-
vationist Proposal1 615 Petition Endorsing Con-
servationist ProposalSEQUENCE NUMBERS

C006	R014
C007	L022
C005	L012
C015	E007
C008	A003
L031	L020
L011	W033
W009	G025
M032	S035
F014	S026
R016	D010
R017	H025
J002	W026
J001	S047

*I **S FORM LETTERS & PETITIONS

SEQUENCE NUMBERS

C011
E013
D014
D029

* Inputs
**Signatures

VRM CLASS RATINGS

"The purpose of a Visual Resource Management (VRM) Class is to reduce the visual impacts of developed activities and to manage the quality of the visual environment."

VRM classes are determined by combining the ratings from scenic quality classes, visual sensitivity levels, and distance zones. Scenic quality classes are rated for landform, water, color, vegetation, intrusions and uniqueness. These elements are combined and the area is quantified as one of the following classes:

Class A - Unique, outstanding features

Class B - Outstanding features common to the physiographic region

Class C - Features common to the physiographic region

Sensitivity levels are determined by frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and assigned a high, medium or low sensitivity level.

Distance zones are placed in three categories: foreground/middleground zone, background zone, seldom seen zone. The foreground/middleground zone is closer to the view and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are less detailed to the viewer and most impacts blend with the landscape because of the distance viewed from.

Ratings from scenic quality classes, visual sensitivity levels and distance zones are combined to form VRM classes. The VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape. See Appendix 3 for definitions of each VRM class.

APPENDIX 3

CRITERIA FOR VISUAL RESOURCE MANAGEMENT CLASSES

- Class I - Applies only to classified special areas, e.g., roadless, wilderness, primitive, natural areas, etc. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
- Class II - Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.
- Class III - Landscapes with Class B scenery quality and high visual sensitivity in the background visual zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground visual zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- Class IV - Landscapes with Class B scenery quality and high visual quality sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
- Class V - Applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions, or to areas that have the potential for enhancement. This classification indicates that change is needed. The class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objectives should be identified.
-

Source: After BLM Manual 6310 (U. S. Department of the Interior, Bureau of Land Management, 1975).

APPENDIX E

WILDERNESS ANALYSIS REPORT

NAVAJO PEAK WILDERNESS STUDY AREA

NM-010-059
ALBUQUERQUE DISTRICT

TAOS RESOURCE AREA



I. GENERAL DESCRIPTION

A. Location

The Navajo Peak WSA is located in Rio Arriba County, New Mexico approximately 3.5 air miles south of El Vado, New Mexico (Map E-1). The study area is included on three USGS topographical maps-- the Boulder Lake Quadrangle, the Tierra Amarilla Quadrangle, and the Navajo Peak Quadrangle. Refer to the Appendix for a legal description of the study area.

B. Climate and Topography

The study area is composed of a combination of gently rolling grass and sage plains bordered by dense ponderosa stands and the northern portions of Gallina Peak. The unit is bisected on a north-south line by the Chama River which meanders through a 900 foot deep canyon. The area ranges in elevation from 6,600 feet (2,000 meters) to 7,500 feet (2,300 meters).

The mean annual temperature for the Navajo Peak region is 44^o F. (22^o C.). The temperature ranges from 84^o F. (29^o C.) during the summer months to 4^o F. (-16^o C.) in the winter. July is usually the warmest month and January is the coldest.

Annual precipitation ranges from 14" to 16" (36 cm - 41 cm). Precipitation is a result of both snowpack and seasonal rainfall.

Winds are primarily from the south and southwest.

C. Land Status

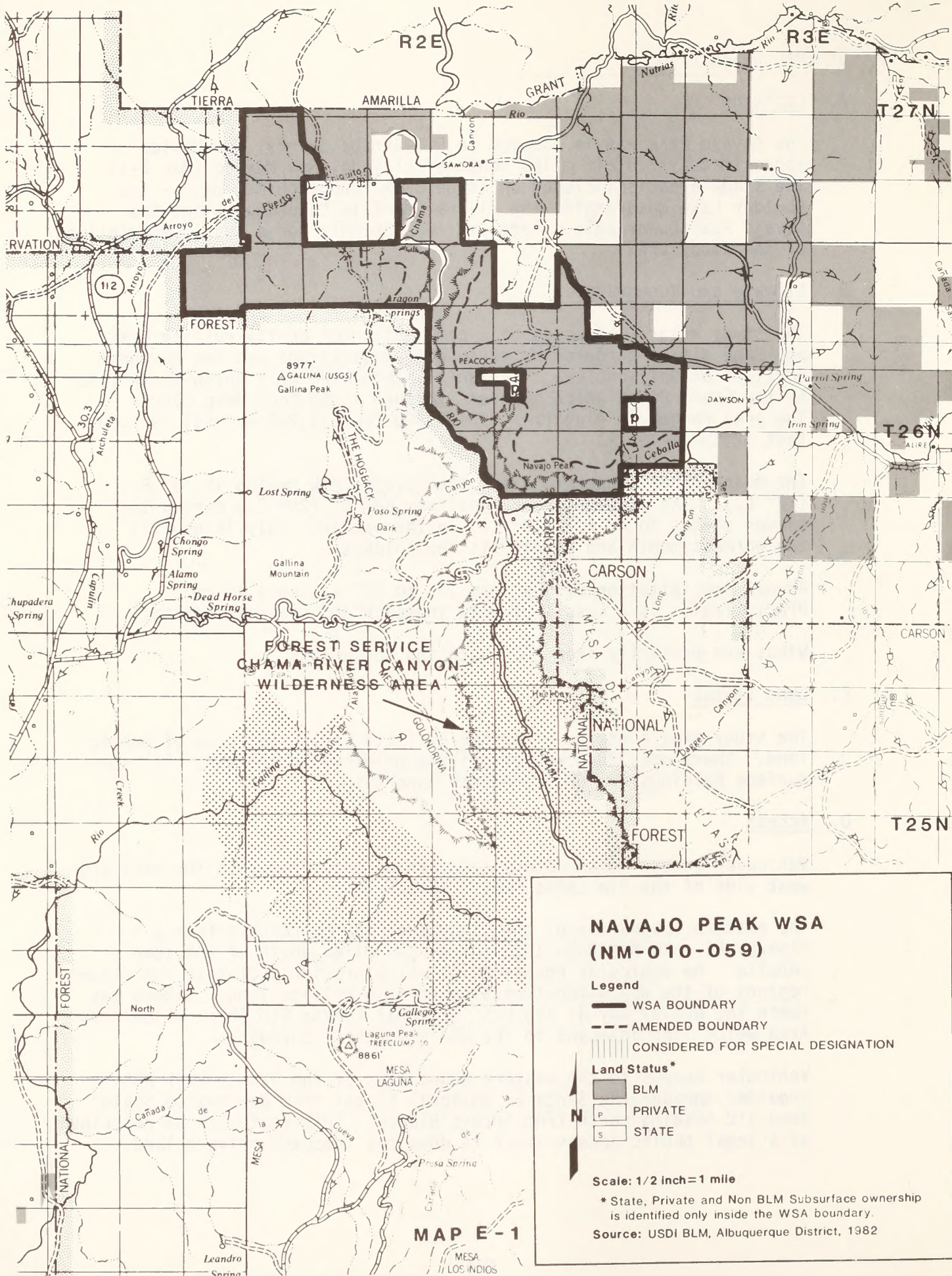
The study area contains a revised estimate of 11,985 acres of public land. There are 320 acres of private holdings in the WSA. All sub-surface holdings are under Federal ownership.

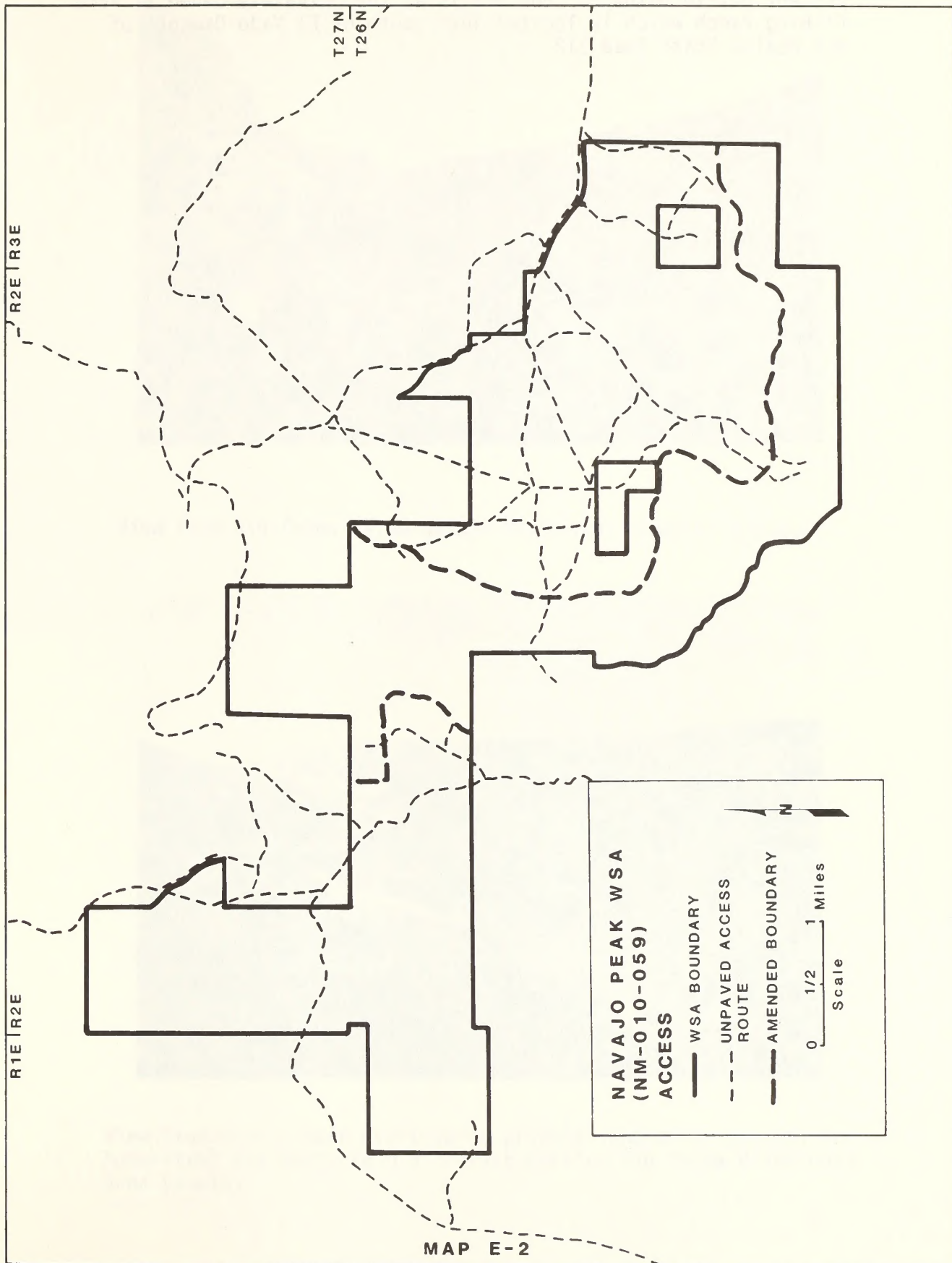
D. Access

Vehicular access to the study area can be made from both the east and west side of the Rio Chama Canyon (Map E-2).

The eastern boundaries of the study area may be reached from U.S. Highway 84 onto BLM Road 1023 (dirt) two miles south of the town of Cebolla. No vehicular routes exist which provide access to the eastern regions of the WSA without passing through private land. Hikers may reach the WSA by way of the U.S. National Forest Rio Chama Wilderness Area which lies adjacent to the WSA's southern boundary.

Vehicular access to the western boundaries of the Navajo Peak WSA is provided through the Santa Fe National Forest from New Mexico State Road 112 heading north from Arroyo Blanco. This route can be described as a legal public access since it does not trespass private land.





The final ingress to the WSA is via boat on the Rio Chama. The present put-in point for boaters is at the privately owned El Vado Fishing Ranch which is located just south of El Vado Dam off of New Mexico State Road 112.



View from Rio Chama below Navajo Peak looking north and east.



View from Navajo Peak overlooking private inholdings (vacation homesites) and Santa Fe U.S. Forest Service Rio Chama Wilderness Area (south).

Side canyon entering the Rio Chama
from the east.



View of the Rio Chama from below
the El Vado Reservoir.

II. EXISTING RESOURCES

A. Geology

The Navajo Peak WSA is located in the eastern portion of the Gallina Fault Zone, a north and northwest trending, strongly faulted series of anticlinal and domal structures that extend some 25 miles from the Tierra Amarilla Grant (northern boundary of the WSA) to the Rio Arriba-Sandoval County line. The fault is a southern extension of the Archuleta Arch, which extends some 40 miles to the Archuleta Mesa, on the Colorado-New Mexico line. Together, the two structures form the boundary between the San Juan Basin (west) and the Chama Basin (east).

The WSA is characterized by a surface cover of eastward dipping Cretaceous sediments (Mancos and Dakota Formations) that have been frequently interrupted and offset by faulting. In the western portion of the WSA, erosion by the Rio Chama has resulted in a spectacular gorge up to 900 feet deep that has exposed the underlying Morrison Formation (Jurassic) on the canyon walls. Quaternary alluvium has been deposited on the canyon floor.

While no pre-Morrison rocks have been exposed in the WSA, outcroppings of lower Mesozoic (lower Jurassic and Triassic) and upper Paleozoic (Permian through Mississippian) rocks elsewhere along the Rio Chama and Gallina Fault would seem to indicate that the same rock types underlie the WSA. It is also thought that both the Pennsylvanian and Mississippian rocks overlie Precambrian igneous metamorphic complexes.

The Gallina Fault is believed to have begun to move shortly after the close of the Cretaceous deposition and appears to have been the axis of an arch. This is evidenced by the thinner sequence of Cretaceous sediments in the Chama as opposed to the San Juan Basin.

While no detailed paleontologic inventory has been conducted in the Navajo Peak WSA, the presence of known fossil-bearing rocks, particularly the Morrison Formation, indicates that there is a fair to good potential for the discovery of paleontological resources.

B. Water

The WSA lies within the Rio Chama drainage, bounded on the north by the Rio Nutrias and the south by the Rio Cebolla, which both feed into the Rio Chama from the west.

The surface is rolling, bisected by arroyos flowing into these drainages. The west side, along the Rio Chama, is steep (greater than 20 percent slope) and highly eroded.

Surface water is found in the Rio Chama and its major tributaries to the north and south of the area. The flow of the Rio Chama has seasonal variations that are modified by upstream releases from the El Vado Reservoir. During the late summer through early spring, flows are moderate (100-500 cubic feet-per-second). During the spring snowmelt,

the flow is high (up to 5,000 cfs). Occasional summer thunderstorms will cause Chama tributaries to flow with heavy sediment and dissolved solids which degrade the quality of water in the Rio Chama.

All surface water from the Rio Chama and its tributaries should be purified for consumptive use.

There are springs reported to be within the WSA but, they have not been confirmed. Two hot springs are located on private land north of the WSA boundary along the Rio Chama.

C. Soils

Soil types in the study area are grouped into two associations;

Las Lucas-Little-Persayo association: This association occurs east of the Chama Canyon rim on gently to strongly sloping and rolling uplands. Although slopes are predominately less than 20 percent, some of the Persayo soils occupy hilly landscapes with slopes up to 25 percent. In addition, escarpments and break areas consisting of outcrops of shale and sandstone are commonly steep to very steep.

The soils which are light to moderately light colored, calcareous, and highly erodible are forming predominately in materials weathered from gray and olive colored shale. They support fair to good stands of vegetation.

Rock Land-Rough Broken Lane association: This association, along the Chama and below the rim, is characterized by rough and broken topography, very steep slopes and rock outcrops. Included are escarpments, steep canyon walls, rocky ridge tops, rock slides, rock ledges, and steep breaks, all of which are dominated by rock outcrops and small areas of highly variable soils. The exposed bedrock consists of sandstone, shale, tuff, basalt, quartzite, and granite. Those parts of this association with outcrops of tuff, basalt, and sandstone contain vertical or near vertical and precipitous cliffs and escarpments that surround many of the mesas to form colorful canyon walls along the Chama and tributaries.

D. Vegetation

Within the Navajo Peak Wilderness Study Area, a unique diversity of vegetation types exists. They vary from ponderosa pine forests, to riparian vegetation, to a northern cold desert grassland. Refer to the permanent documentation file (located at the Taos BLM office) for a vegetation type summary of the WSA.

The potential natural vegetation according to Kuchler-Bailey would divide the area into three types. These are Pine-Douglas Fir, Pinyon-Juniper Woodlands, and Great Basin Sagebrush. The vegetation type along the rim and above the Rio Chama has a unique development of ecological successional stages. Along the gorge rim the ponderosa pine (Pinus ponderosa) type predominates. Within the understory of the ponderosa pine type is a sub-canopy of mountain shrubs (oakbrush-

Quercus gambelii, serviceberry, Amelanchier spp. currant-Ribes spp., and mountain mahogany (Cercocarpus montanus). This understory is ecotone to the pinyon juniper vegetation type.

The pinyon (Pinus edulis) and juniper (Juniperus spp.) are in dense stands where the contact is with the ponderosa pine type. The sub-canopy of pinyon-juniper vegetation type is the sagebrush (Artemisia spp.) and native grasses (bluegrama-Bouteloua gracilis, Indian rice-grass-Oryzopsis hymenoides, side-oats grama Bouteloua curtipendula).

The pinyon-juniper type melds to the sagebrush type. The sagebrush is the most prevalent vegetation type. The understory contains the same grasses as found in the pinyon-juniper type. During the late 1950's, 1960's, and early 1970's a program of vegetative manipulation was initiated. Large scale sagebrush clearing and subsequent planting of crested wheatgrass (Agropyron cristatum) was completed. Referring to Map E-3, the cross-hatched areas are those where vegetative modification has been applied to roughly 42 percent of the Wilderness Study Area.

On shallow soils, where sagebrush is not found, the grasses of northern cold desert predominate. Blue grama, Indian ricegrass, and Western wheatgrass (Agropyron smithii) can be found.

In all cases, each vegetation type represents an ecological stage of succession through which man has begun to impact. Early years of homesteading reduced the ponderosa pine type, subsequently the demand for pinyon-juniper for fuelwood and fence posts has impacted the natural state of the pinyon-juniper vegetation type. The continued demand for livestock forage has greatly altered the successional development of the sagebrush vegetation type.

The vegetation below the rim is limited to steep slopes and shallow soils. The canyon has not received any significant impact from human influence except for some signs of early logging enterprises. The vegetation classes since the site potential would dictate the specific vegetation type found. The riparian areas along the Rio Chama contain the most diverse number of species of all the vegetation types within the WSA. The most obvious plant species associated with this area are cottonwoods (Populus spp.), willows (Salix spp.), ponderosa pine, and various deciduous shrubs. The canyon presents a unique diversity of vegetation. It should also be noted that it remains somewhat intact with very little human influence.

Threatened and Endangered Plants: According to the official Threatened and Endangered Species List prepared by the U.S. Fish and Wildlife Service, no threatened or endangered plants are presently recognized as being indigenous to this locality or known to occur within the study area. Pediocactus papyranthus or "grama cactus", a candidate for the Threatened and Endangered State List, has been unofficially reported within the WSA.

E. Wildlife

In conjunction with the various vegetation types discussed in the previous section; there are several habitat types.

The pinyon-juniper and sagebrush types are intertwined by many finger-like projections providing an extensive edge effect between the two vegetation types. The high density pinyon-juniper types lie adjacent to the Rio Chama canyon with the sagebrush type lying to either side of the pinyon-juniper band. Some of the areas show heavy utilization with extensive livestock use on browse species such as oakbrush and mountain mahogany, which support the mule deer in the area. Other species using the areas above the canyon rims include elk, black bear, coyote, and turkey.

The canyon type provides a greater diversity of plant species, excellent cover, and many cliff areas for birds of prey and cavity-nesting birds. This area provides excellent habitat for a wide variety of large mammals (mule deer, elk, and mountain lion) small mammals (bobcat, beaver, and raccoon) avian species (wintering bald eagle, red-tailed hawk, American kestrel, prairie falcon, golden eagle, and Cooper's hawk) and reptiles.

The riparian areas along the Rio Chama augment the habitat diversity of the Rio Chama canyon and demonstrate a considerable amount of use by large mammals, passerine birds, aquatic associated mammals and waterfowl.

The aquatic habitat provides both a brown and rainbow trout fishery. There are also populations of native minnows and suckers. The instream cover is provided primarily by large, deep pools, and large boulders. The river is predominantly pools with only 20 to 25 percent riffles. The stream bank vegetation is less than optimal due to domestic livestock grazing.

Of the verified significant species, the majority fall within the harvest species category. Recovery species include those discussed under threatened and endangered species. A taxonomic list of probable faunal species which either reside or frequent the area and comprise the remainder of the ecosystem maintenance species is available at the Taos BLM office.

Threatened and Endangered Animals: The threatened or endangered animals confirmed to frequent the area include the Federal and State protected bald eagle and peregrine falcon. The black-footed ferret is listed by the U.S. Fish and Wildlife Service but no extensive prairie dog towns exist within the WSA to support the threatened species. The State protected osprey and marten are also considered species which may utilize the area.

F. Visual Resources

The topographic relief is divided into three types - flat, open plain, rolling foothills and the deep river canyon of the Rio Chama. Vegetation varies from lush riparian habitat in the Rio Chama canyon, to sagebrush

and grasses on the open plains, to pinyon-juniper and ponderosa pine in the foothills and higher elevations. Landscape colors within the canyon are light and dark greens from the vegetation and brilliant reds, browns, and orange from the canyon walls. The area above the canyon rims is predominantly green, gray, and brown with some variations in the distant background. The overall feeling is one of open expanse above the canyon rims and extreme solitude and isolation within the confines of the Rio Chama canyon.

The Navajo Peak Scenic Quality Rating Unit is Visual Resource Management Classes II and III. The Class II Rio Chama canyon indicates that any change in the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape. The areas above the rims of the canyon gorge are rated Class III which denotes that any changes in the basic elements caused by management activity may be evident but, should remain subordinate to the visual strength of the existing character. However, the entire WSA is to be managed as a Class II due to the nonimpairment criteria, while under the wilderness review process.

G. Cultural Resources

The study area has had no systematic cultural survey. However, surveys in the surrounding two districts have recorded high densities of archaeological sites. The same pattern is expected in the Wilderness Study Area. Based on a review of reported archaeological research in the Chama and Gallina Archaeological Districts, the proposed Wilderness Area is expected to contain remains from the PaleoIndian, Archaic, Prehistoric Pueblo, and Historic Homesteading Periods. This suggests a cultural inventory of the WSA would reveal a significant array of cultural resources documenting the cultural development of the region for over 3,000 years.

H. Air

Due to the remoteness of the WSA from any sources of air polluting emissions, the air quality in the study area is considered good to excellent.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

a) Leasable

No drilling activity has occurred within the Navajo Peak WSA. However, most of it has been leased for oil and gas and the U.S. Geological Survey has rated it as being prospectively valuable in oil and gas. The WSA is only about 5 miles northeast of the producing Puerto Chiquito Oil and Gas Field. The WSA appears to be on the same or a similar structural trend as this field and contains known producing formations.

Some coal may be present in small amounts in the Dakota Formation; however, the only major coal-bearing formation in the vicinity, the Menefee Formation (Upper Cretaceous), does not occur within the Navajo Peak WSA. Consequently, the potential for coal development is considered to be very low.

b) Locatable

A great deal of uranium exploration has taken place in the vicinity of, and possibly within, the Navajo Peak WSA. Some small uranium occurrences have been found in the area, often associated within organic matter (e.g., bones and plant debris), but no uranium occurrences have been reported from the WSA. While there does not appear to be a very high potential for the discovery of large uranium deposits in the Navajo Peak WSA, the presence of the Burro Canyon (Cretaceous), Morrison (Jurassic), and Chinle (Triassic) Formations in the WSA, all known to contain uranium elsewhere, warrants a more detailed study before an adequate conclusion can be made as to the potential for the discovery of uranium.

2. Non-Energy Minerals

a) Leasable

While nearly all non-energy leasable minerals are found in sediments and the Navajo Peak contains a relatively thick sequence of sedimentary rocks, the potential for the discovery of valuable non-energy leasable minerals is low. The possibility of finding phosphates is remote, since there are no known phosphate-bearing formations located in the WSA. Likewise, the possibility of finding sodium or potash deposits are also remote, since there are no known occurrences in any of the sediments, nor are there any known alkali basins within the WSA.

b) Locatable

At present, there is no activity in the Navajo Peak WSA pertaining to locatable minerals; there are no mining claims located in the immediate area and there has been no known exploration or development attempted. There may be a slight chance of finding "red bed" copper deposits (i.e., copper carbonates) in the Triassic Chinle Formation, since these deposits have been found in the Chinle elsewhere. However, the probability of finding other locatable mineral deposits in the sedimentary rock sequence seems low, since there are no igneous intrusions (which would bring mineral-rich solutions) and no apparent mineralization occurring along the various fault planes. Therefore, it is concluded that the potential for finding valuable mineral deposits in the sediments is low.

There is a possibility of finding massive sulfides (e.g., copper, lead, zinc, molybdenum) in the Precambrian igneous/metamorphic complex that underlies the WSA. However, more data would be required before an evaluation of the potential for the discovery of massive sulfides can be made.

c) Saleable

Even though most of the sediments found in the WSA are friable sandstones and shales, easily eroded and not very cemented, they are not considered to be very good sources of aggregate. The Precambrian igneous/metamorphic rocks are too deep to have very much potential as a source of saleable minerals. The alluvium found in the Rio Chama is too inaccessible to be considered as a potentially valuable source of mineral materials.

B. Watershed

The presence of several water catchments are the only forms of water control structures within the WSA. Water from the Chama and its tributaries are also utilized by livestock and wildlife.

In the event the Abiquiu Reservoir, located downstream from the WSA, increases its storage capacity the flow of the Rio Chama may be affected. The potential result would be more frequent releases of water from El Vado Reservoir, during the late summer. Consequently, the flow would be higher than normal for that time of year.

C. Livestock Grazing

The study area encompasses five cattle grazing allotments. The primary use period is spring-summer-fall with no use in winter due to snow pack.

Two allotments have completed Allotment Management Plans and are available at the Taos BLM office.

The range improvements within the study area are extensive (see Map E-3). Many existing fences, to aid the establishment of the sage clearing and reseeding success, are being scheduled for removal. A summary of the existing range allotments is found in Table E-1.

D. Forest Products

The Navajo Peak WSA contains an abundant supply of commercial and non-commercial woodlands. The commercial supply consists primarily of ponderosa pine. There are approximately 350 acres with potential production of over 50,000 board feet. There are approximately 1,500 acres of pinyon-juniper non-commercial woodlands with a potential fuelwood market for 15,000 cords.

Favorable topography has allowed for selective cuttings for timber sales in the past. An additional 80 acres of thinning, for enhancement of timber production, and 100 acres of clearcutting for mistletoe eradication, have been performed within the WSA.

Three forestry study plots are located within the boundaries of the WSA. These study plots have been used to monitor overall timber production for future timber sales.

The 1979 Rio Grande Management Framework Plan does not recognize the potential use of areas within the Navajo Peak WSA for future timber harvest. No specific plans for issuing sales or permits have been considered at the present time.

E. Recreation

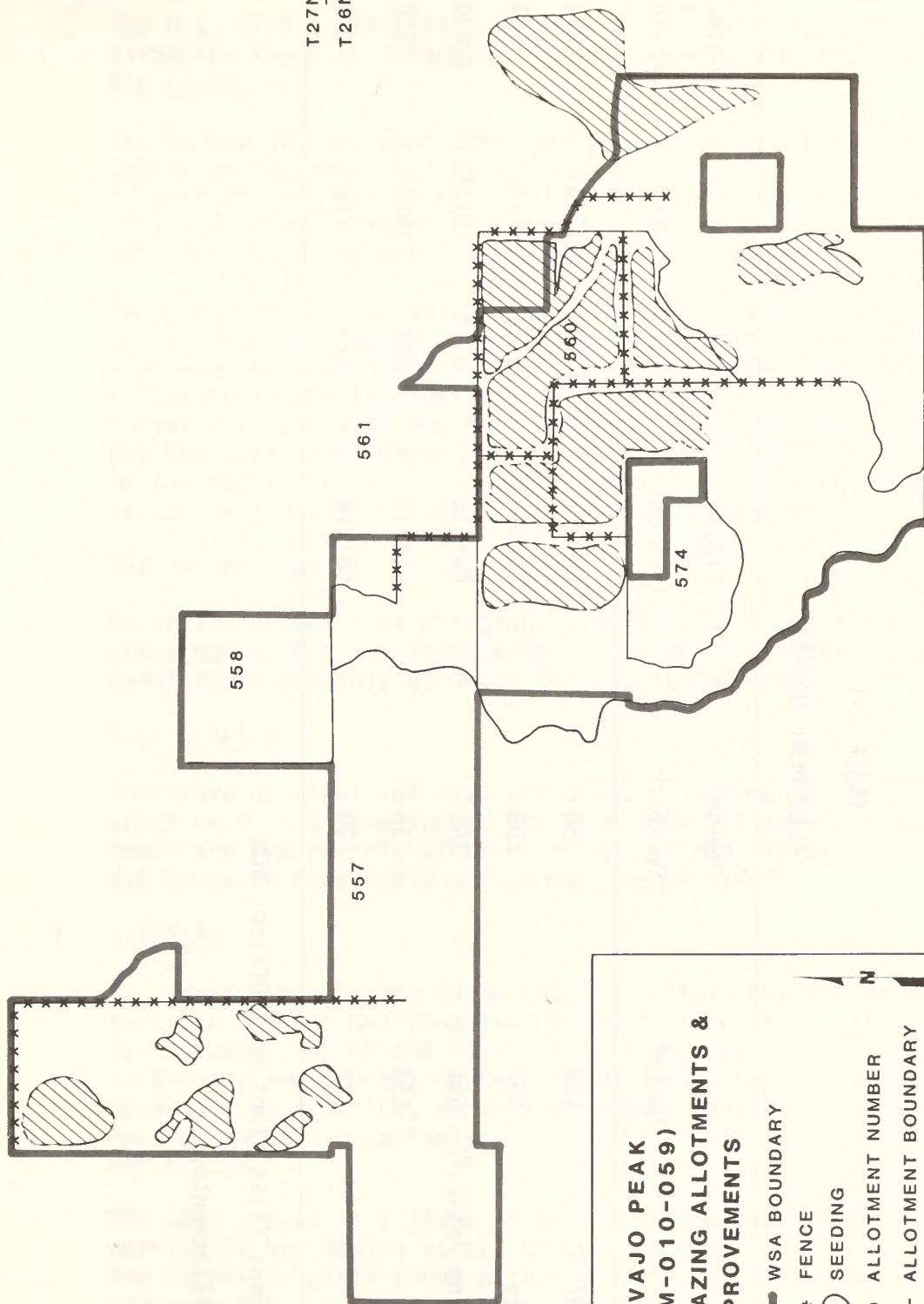
A thirty-mile segment of the Rio Chama, immediately below El Vado Reservoir to the headwaters of the Abiquiu Reservoir, was designated in 1977 by the New Mexico State Legislature as a "Scenic and Pastoral" River. The portion of the WSA within the Rio Chama "Scenic and Pastoral" River was floated by over 1,200 people during the 1982 river season. These trips were primarily trips of one night duration. Floating, camping, fishing, and hiking are the primary recreation activities occurring within this River corridor as a result of these trips and from other users. Hikers and backpackers from the adjacent U.S. Forest Service Rio Chama Wilderness Area also utilize portions of the WSA, especially along the Rio Chama.

Very little recreation activity occurs above the rims of the Rio Chama gorge in the WSA. Some hunting activity is apparent due to old hunter camps sited in some of the pinyon-juniper stands. The Navajo Peak study area is within New Mexico Game and Fish Management Unit #5. The permanent documentation file has a listing of elk and mule deer hunting pressure, harvest and success for 1980 and 1981. Fishing use is also quantified for the Rio Chama.

R2E | R3E

R1E | R2E

T27N
T26N



**NAVAJO PEAK
(NM-010-059)
GRAZING ALLOTMENTS &
IMPROVEMENTS**

— WSA BOUNDARY

*** FENCE

○ SEEDING

550 ALLOTMENT NUMBER

— ALLOTMENT BOUNDARY

0 1/2 1 Miles
Scale

MAP E-3

TABLE E-1
ALLOTMENT SUMMARY

Allotment Name	Number	Number of Livestock	Class of Livestock	Start	End	Animal Unit Month
Hibner AMP II <u>a/</u>	560	86	Cattle	10/26	12/31	875
Puerto Community	557	208	Cattle	5/1	10/31	961
Esperanza Grazing Assoc. <u>a/</u>	561	345	Cattle	4/16	10/15	2,070
Jones	558	16	Cattle	3/1	10/30	120
Peacock Place	574	20	Cattle	4/1	7/1	36

Source: Allotment files, Taos Area Office, BLM

Note: a/ AMP Allotments.

F. Education/Research

The U.S. Fish and Wildlife Service is presently conducting a fisheries study to determine fishery and riparian habitat on the Rio Chama.

The Bureau of Land Management and U.S. Forest Service have a co-operative agreement in effect for the study of the commercial and private boating use on the Rio Chama. This study is in its third year and recommendations for use allocation and protective management will be in effect for the 1983 river season.

The Rio Chama is one of only two floatable streams in New Mexico and represents a unique educational opportunity for study of a river environment from the confines of the river itself. Many educational entities (University of New Mexico, New Mexico State University, Santa Fe Mountain Center, Albuquerque Public Schools, Boy and Girl Scout Organizations, etc.) have conducted environmental education excursions on the Rio Chama for the study of this unique biological ecosystem as an outdoor classroom.

G. Native American

No areas currently of religious significance to Native Americans are known within the study area. Shrines constructed by prehistoric populations probably do occur throughout the area.

H. Realty Actions

There are no rights-of-way, withdrawals, easements, or permits which need to be considered for this WSA. It may be noted that there are two parcels of private land within the boundaries of the WSA to which reasonable access must be provided.

I. Wildlife

The portion of the Rio Chama which is within the WSA provides a suitable habitat and food base for the river otter. The potential for introduction of the river otter is dependent upon the amount of privacy and protection the species would receive. It may be necessary to restrict, as well as inform, boaters if such a project was implemented. Currently, there is no official recommendation documented.

The sage grouse is a State protected bird because the northwestern portion of New Mexico is at the periphery of the bird's range. The sagebrush plain found within the WSA, above the Rio Chama, is characteristic habitat for the sage grouse. The sage grouse may also be a potential candidate for introduction in the Navajo Peak region. If introduction took place, restrictions on vehicle and human activity would need to be considered. The possibility of introducing the sage grouse to the Navajo Peak WSA is also theoretical at this time.

There is no Habitat Management Plan scheduled to be written through the 1986 fiscal year. If, in the future, a Habitat Management Plan were to be prepared, the Navajo Peak area would be intensively inventoried and other potential uses would be more accurately identified.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a) Naturalness

The amount and degree of impacts which effect the naturalness of the area is divided distinctly between the Rio Chama canyon and the open range above its rims.

The Rio Chama canyon provides the most distinctive indications of naturalness throughout the WSA. The views and vistas in and directly above the canyon give one a true feeling of naturalness. Most intrusions are hidden by the canyon walls and are therefore not noticeable from the Rio Chama.

The river canyon is contrasted with the open range topography above. Impacts of human activities are more visible and apparent above the canyon rims. Visible impacts include range improvements (windmills, catchments, seedings, fence-lines, etc.), vehicular routes, private homes and ranch operations, and utility lines. The private inholdings in the WSA are all located outside the Chama River canyon.

The most noticeable impacts in the WSA are the twenty miles of existing vehicular routes used primarily for access to range improvements requiring maintenance on an annual basis (see Map E-3). Physical access is also provided by some of the routes for hunting, camping, and fishing use of the Rio Chama canyon area.

The presence of man-made intrusions above the canyon in the WSA detract from the potential natural qualities of the area. The cumulative effects of these impacts is minimal in the canyon. During the Wilderness Inventory, it was difficult to classify the naturalness of the WSA into one category due to the distinct contrast between the two areas.

b) Solitude

The opportunities for solitude in the Navajo Peak WSA are excellent. The topographic and vegetative screening of the Rio Chama canyon offer tremendous experience in solitude for visitors who are down by the river. A truly unique feeling of isolation is possible while either floating or hiking the inner canyons below the rims.

This is primarily due to limited access to the river, therefore, fewer encounters with humans are anticipated. Also, evidence of human activity found above the canyon are mitigated by vegetative and topographic screening when the user is down by the river. A user can readily find seclusion within the river canyon boundaries.

The chances for solitude are somewhat diminished above the rim due to daily ranching operations and the closeness of U.S. Highway 84. But, solitude may still be achieved by the user through secluded locations which are still easily found above the canyon rims.

c) Recreation

The most significant recreational feature of the Navajo Peak WSA is the Rio Chama where boating occurs several months out of the year (April-July). Other opportunities for primitive and unconfined recreational activities besides bathing include backpacking, hiking, cross-country skiing, and camping. These activities do not require facilities or motorized equipment and are easily available in the study area.

2. Special Features

The Rio Chama "Scenic and Pastoral River" (New Mexico State Designation in 1978) flows through the Navajo Peak WSA. This is the single most important and valuable natural feature of the study area. The Rio Chama canyon provides one of only two floatable rivers in northern New Mexico. This makes the Rio Chama not only unique in its recreational boating opportunity, but increases its future potential demand due to the growing sport of river running throughout the West.

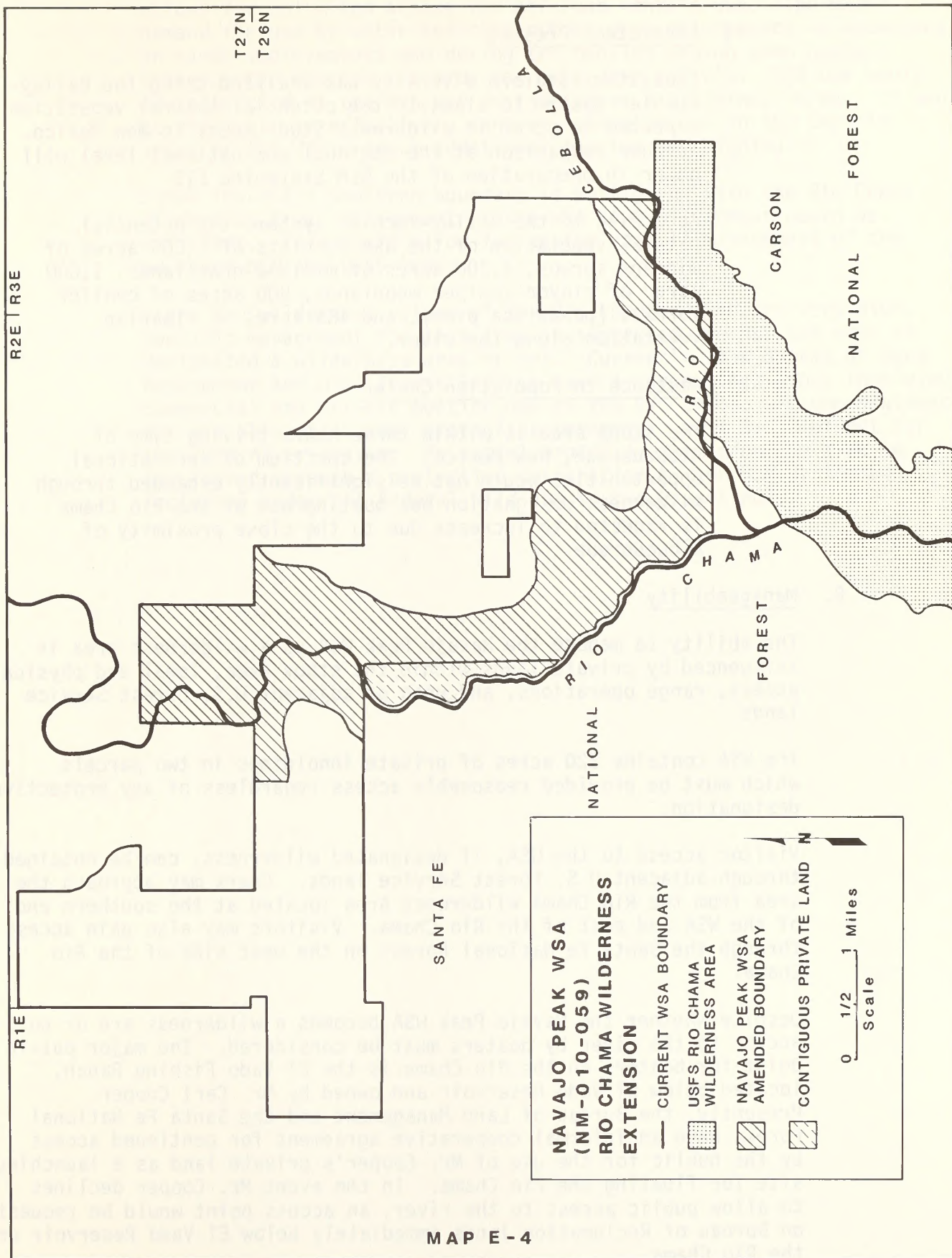
The viewing of geologic features, wildlife, and riparian vegetation from the river make the Rio Chama portion of the WSA a special feature which should be addressed through some sort of Federal protective management action.

The U.S. Forest Service Rio Chama Wilderness is located immediately south and west of the WSA (see Map E-4) which also indicates the special environmental protective considerations placed on the Rio Chama and the adjacent USFS lands. These specific State and Federal protective designations are indicative of the special nature of the Rio Chama canyon.

3. Multiple Resource Benefits

The Navajo Peak WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would administrative designations available to the Bureau.

A more detailed discussion of multiple resource benefits may be found in Section 6 under the discussion of the impacts of the All Wilderness Alternative.



MAP E-4

4. Diversity

a) Ecosystems Present

Ecosystem/landform diversity was analyzed using the Bailey-Kuchler system to classify the potential natural vegetation expected to occur in Wilderness Study Areas in New Mexico. Further comparison at the regional and national level will occur in preparation of the BLM Statewide EIS.

According to the Bailey-Kuchler system, the potential natural vegetation of the WSA consists of 5,000 acres of midland shrubs, 4,700 acres of midland grasslands, 1,000 acres of pinyon-juniper woodlands, 800 acres of conifer forests (ponderosa pine), and 485 acres of riparian vegetation along the river.

b) Distance to Population Center

The study area is within three hours driving time of Albuquerque, New Mexico. The spectrum of recreational opportunities would not be significantly expanded through wilderness designation but boating use of the Rio Chama is expected to increase due to the close proximity of Albuquerque.

B. Manageability

The ability to manage the Navajo Peak WSA as a wilderness area is influenced by private lands within the study area, legal and physical access, range operations, and uses of adjacent U.S. Forest Service lands.

The WSA contains 320 acres of private inholdings in two parcels which must be provided reasonable access regardless of any protective designation.

Visitor access to the WSA, if designated wilderness, can be obtained through adjacent U.S. Forest Service lands. Users may approach the area from the Rio Chama Wilderness Area located at the southern end of the WSA and east of the Rio Chama. Visitors may also gain access through the Santa Fe National Forest on the west side of the Rio Chama.

Despite whether the Navajo Peak WSA becomes a wilderness area or not, access to the river by boaters must be considered. The major put-in point for boaters on the Rio Chama is the El Vado Fishing Ranch, located below El Vado Reservoir and owned by Mr. Carl Cooper. Presently, the Bureau of Land Management and the Santa Fe National Forest have an informal cooperative agreement for continued access by the public for the use of Mr. Cooper's private land as a launching site for floating the Rio Chama. In the event Mr. Cooper declines to allow public access to the river, an access point would be requested on Bureau of Reclamation lands immediately below El Vado Reservoir on the Rio Chama.

The rolling, open terrain of the WSA above the Rio Chama canyon rims allows for unlimited access for off-road vehicle use. The major demand for use by motor vehicles occurs when maintenance is necessary on range improvements and during the hunting season when hunters traverse the eastern rim area for mule deer and elk. ORV use would be restricted if the WSA was designated as a wilderness area. It would be difficult to effectively control vehicular use on the top rim areas of the WSA without additional fencing and signing.

Since the WSA's southern boundary is contiguous with the Rio Chama Wilderness Area, management of the WSA as a wilderness would be efficient. This would allow for easier overall management of the adjacent BLM and USFS lands.

Since the wilderness values of the Rio Chama canyon are very high, specific management for this area is suggested whether the area is designated a wilderness area or not. Currently, the Bureau of Land Management and U.S. Forest Service have a cooperative study involving commercial and private boating use on the Rio Chama. Recommendations for use allocation and protective management will be in effect for the 1983 river season. Potential protective measures may also be considered through a protective designation by the BLM or through inclusion under the Federal Wild and Scenic Rivers Act.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement, in reference to this WSA, began with the Rio Grande Management Framework Plan (1979) and continued throughout the Taos Resource Area Roadless Study, and resulting WSA recommendation phase, and the Off-Road Vehicle Designation Plan which included the Navajo Peak WSA.

Public involvement specifically concerning the Navajo Peak WSA has primarily been in the form of written comments. The majority of written comments indicate that Navajo Peak qualifies as a wilderness due to its scenic beauty and opportunities for solitude and primitive types of recreation-hiking, camping, and boating. Comments have also been made expressing the need to extend the wilderness boundaries from the upper reaches of the U.S. Forest Service's Rio Chama Wilderness Area. Those who expressed support for wilderness designation also discussed the need to protect the Pediocactus paprycanthus, "grama cactus", which has been unofficially reported in the study area and is a potential candidate for the New Mexico Threatened and Endangered Plant Species List.

Several letters have been received opposing a wilderness designation for the Navajo Peak WSA. The primary reason was that the study area does not appear natural.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

1. Impacts to Minerals

Designating the Navajo Peak WSA as wilderness could prevent any large scale exploration efforts and development of mineral deposits located within the WSA. However, the likelihood and demand for mineral development is moderate to low in the area.

2. Impacts to Other Resources and Uses

a) Watershed

There would be no major impacts to surface water if the entire WSA were designated as wilderness. Treatment of the watershed would be restricted to nonmotorized equipment under wilderness designation. Prevention of surface disturbance would protect the surface and consequently stabilize watershed conditions by increasing infiltration rates and decreasing surface run-off.

b) Livestock Grazing

There would be no significant impact on the range program if the entire WSA were designated wilderness. This is because existing livestock operations are "grandfathered" and are allowed to continue at existing levels in designated wilderness.

c) Forest Products

The 50,000 board feet of commercial timber and 1,500 cords of pinyon-juniper fuelwood would not be allowed to be cut. However, there are presently no plans for commercial timber or fuelwood sales in the WSA.

d) Recreation

The All Wilderness Alternative would enhance certain recreation opportunities such as hiking and backpacking, but would restrict those that require motorized vehicles such as vehicular camping, hunting, and off-road vehicle use activities. Hunter vehicle access would be limited to wilderness boundaries which may result in lower hunter success ratios. Boating use would not be impacted due to put-in and take-out points being located outside the proposed boundaries. The overall impact to recreation use would be low, as current ORV use is low.

e) Cultural Resources

Wilderness designation would limit potential disturbances on cultural sites. Wilderness may restrict but not eliminate, site stabilization and excavation. These projects may be approved by the State Director on a case-by-case basis, therefore the impact would be low.

f) Wildlife

The primary impact of this alternative would be to insure habitat privacy, a growing importance to the stability of elk herds in northern New Mexico.

B. Amended Boundary

The Amended Boundary Alternative would recommend for wilderness designation the entire river corridor and one-quarter mile beyond the canyon rims. This alternative is called the Rio Chama Wilderness Extension. The area recommended for wilderness encompasses approximately 4,032 acres and is 5 miles in length. The area described would fall under the legal description found at the end of this report.

This amended boundary recommendation may prove more feasible for manageability and at the same time preserve the Rio Chama canyon which requires more protective measures than the areas above the rims. The area proposed is adjacent to the existing Santa Fe U.S. Forest Service Rio Chama Wilderness (Map E-4) and joint management procedures would be in order for the proposed Amended Boundary Wilderness recommendation.

1. Impacts to Minerals

Impacts to minerals caused by this action are expected to be minimal due to the location of the mineralized area (oil and gas) being primarily above the canyon rims.

2. Impacts to Other Resources and Uses

a) Watershed

This action would provide protection for the canyon slopes but not the area beyond one-quarter of a mile from the rim. Off-road vehicle use is restricted already in both areas.

b) Livestock Grazing

There would be no significant impact on the range program if the Rio Chama Wilderness Extension was implemented. No new range improvements are planned for the Rio Chama canyon area.

c) Forest Products

This alternative would have low impacts on the commercial timber and fuelwood as no sales are planned for the area within amended boundary area which is recommended as suitable for wilderness.

d) Recreation

The non-motorized boating use and other primitive recreation activities which occur in the canyon would continue while the vehicular access to the rim areas would not restrict recreation use requiring vehicles (ORV use, hunting, camping, sightseeing, etc.). This alternative would preserve the aesthetic qualities

of the BLM section of the Rio Chama and combine the proposed amended WSA with the existing U.S. Forest Service Rio Chama Wilderness Area.

e) Cultural Resources

The Rio Chama Wilderness Extension would serve to preserve the easily spotted historic homestead sites along the banks of the Chama by providing stipulations for the protection of the cultural sites under the Wilderness Act.

f) Wildlife

Impacts on wildlife would be the insured protection of the canyon's habitats which are by far the most critical within the study area.

C. No Wilderness (Amending the Existing Plan)

The existing plan would be amended to provide special protective designations for the canyon as described in the Rio Chama Wilderness Extension Alternative.

This alternative would attempt to protect the natural values of the Rio Chama canyon regardless of wilderness designation. Recommendations would include; 1) continue to propose the Rio Chama for federal designation as a "Wild and Scenic River"; 2) propose a special protective agency designation for the BLM-administered section; and 3) develop a joint management agreement with the U.S. Forest Service and State of New Mexico for protective management actions for preservation of the natural values and primitive recreation opportunities of the Rio Chama.

1. Impacts to Wilderness Values

The impacts to wilderness values would not be significant because this alternative protects the canyon which contains the primary wilderness values of the WSA. However, without designation by Congress wilderness values would not be provided the more permanent long-term protection of law.

2. Impacts to Other Resources and Uses

a) Minerals

This alternative would create no significant impacts on mineral exploration and development. There are presently no plans for mineral activity within the Rio Chama gorge due to the primary mineral values being located above the canyon rims.

b) Watershed

This alternative would serve to enhance the watershed values through increased protection and management and limitations on mechanized and vehicular use.

c) Livestock Grazing

The protective measures proposed for the canyon would not impact livestock grazing in the WSA.

d) Recreation

This alternative would benefit the recreation activities available within the Rio Chama canyon through protective management of the river corridor. Any measures of preservation of the natural values of the Rio Chama would enhance the quality of the recreation experience in the canyon.

e) Cultural Resources

This alternative would increase protection and preservation of the cultural and historical resources within the Rio Chama canyon.

f) Wildlife

Any protective management actions within the Rio Chama corridor would minimize disturbance to wildlife habitat. This alternative would enhance the wildlife program and potentially improve wildlife numbers and opportunities for viewing wildlife.

D. No Action

The No Action Alternative would mean that the WSA would be managed under the existing Rio Grande MFP.

1. Impacts to Wilderness Values

The No Action Alternative would have more significant impacts on the wilderness values of Rio Chama canyon than the areas above the rims. The rim areas are not presently experiencing detrimental use which would impair the natural values. This alternative could have significant impacts on the wilderness and aesthetic values of the inner canyons of the Rio Chama through a lack of protective management.

2. Impacts to Other Resources and Uses

a) Minerals

This alternative would result in no significant impacts on mineral exploration and development.

b) Watershed

No significant changes in watershed conditions would occur as a result of the No Action Alternative.

c) Livestock Grazing

There would be no significant impact on the range program with this alternative.

d) Forest Products

A No Action decision would not affect timber resources.

e) Recreation

There would be no impact to the recreation activities which occur in that portion of the WSA above the canyon rim. However, there is presently no protective designation for the river canyon in this WSA. This situation could eventually result in occurrence of activities which would conflict with the primitive recreation uses of the canyon such as boating, hiking, and camping.

f) Cultural Resources

A recommendation to take no action will not affect cultural resources since it will create no new disturbance to cultural sites.

g) Wildlife

Unknown future actions could reduce habitat privacy, surface character, and the stability of the productive wildlife areas.

VII. RECOMMENDED ACTION

A. Proposed Action Description

The recommendation for the Navajo Peak Wilderness Study Area NM-010-059 is that of the Rio Chama Wilderness Extension. This means 4,032 acres of the original 11,985 acreage is recommended as suitable for wilderness designation.

B. Rationale

The Rio Chama Wilderness Extension is recommended suitable for wilderness designation because of its high quality wilderness values. The Amended Boundary Alternative excludes those portions of gently sloping lands beyond the canyon rims in the WSA lacking high quality wilderness values. The exclusion of these 7,953 acres would also eliminate potential wilderness manageability conflicts with mineral development, ORV trespass and grazing uses. By amending the boundary manageability would be enhanced.

The Chama canyon within the WSA provides the greatest opportunities for solitude and primitive recreation within the WSA. The single most important natural feature of the Navajo Peak WSA is the Rio Chama, which is included in the amended boundary. The canyon's unique and sensitive scenery appears natural and is not impacted by many of the human activities found above the rim. The canyon also provides extensive opportunities of solitude primarily due to limited access to the river and vegetative and topographic screening. The amended boundary alternative allows for primitive recreation which depends on the canyon's scenery, water vegetation, wildlife and geological features.

Manageability would be easier with the amended boundary Rio Chama Wilderness Extension. The natural physical and topographical barriers of the Rio Chama canyon produce easier, more manageable boundaries for ORV users. The amended boundary alternative would minimize restrictive measures on the management of livestock grazing and/or any possibility of future mineral development. Both of these resources are concentrated above the rims, away from the Rio Chama canyon.

The amended boundary recommendation supports the protective measures already implemented by the adjacent Santa Fe National Forest Rio Chama Wilderness. This alternative would serve to preserve and enhance the specific Rio Chama canyon area within the Navajo Peak WSA that is in need of more protective management that is given under the State of New Mexico Rio Chama "Scenic and Pastoral" designation.

The recommendation appears to be the best blend of alternatives and presents the most feasible manageability for the area under study.

C. Consistency with Other Plans

The Rio Chama Wilderness Extension alternative is consistent and in the best interest of both the adjacent existing Santa Fe USFS Rio Chama Wilderness Area and the State of New Mexico Rio Chama "Scenic and Pastoral" designation. The Rio Chama is presently being studied through the "Nationwide Rivers Inventory" by the National Park Service for potential designation as a "Wild and Scenic River." These protective designations and studies acknowledge the importance and unique significance of the Rio Chama canyon which this document seeks to preserve and support.

APPENDIX

Legal Description of Amended Boundary - Navajo Peak Extension

T. 27 N., R. 2 E.,
Section 33, $E\frac{1}{2}$
Section 34, $W\frac{1}{2}$

T. 26 N., R. 2 E.,
Section 3, NENE,
 $W\frac{1}{2}$ NE,
 $W\frac{1}{2}$ SENE,
 $W\frac{1}{2}$,

$N\frac{1}{2}$ NWSE,
SWNWSE,
 $W\frac{1}{2}$ SWSE

Section 4, $N\frac{1}{2}$ $N\frac{1}{2}$,
 $SE\frac{1}{4}$ $NE\frac{1}{4}$
 $E\frac{1}{2}$ SE,
 $E\frac{1}{2}$ NWSE,
SWNWSE,
SWSE,
 $E\frac{1}{2}$ SE,
SW

Section 10, $W\frac{1}{2}$

Section 14, SWNWNE,
 $W\frac{1}{2}$ SWNE,
 $S\frac{1}{2}$ NENW,
SENWNW,
 $S\frac{1}{2}$ NW,
 $SW\frac{1}{4}$
 $W\frac{1}{2}$ NWSE

Section 15 $S\frac{1}{2}$ SWNE,
 $NE\frac{1}{4}$,
 $N\frac{1}{2}$ SW,
SESW,
 $SE\frac{1}{4}$

Section 22, $N\frac{1}{2}$ NE,
 $E\frac{1}{2}$ SENE,
NWSENE,
 $E\frac{1}{2}$ NENW,
 $E\frac{1}{2}$ NESW

Section 23, $S\frac{1}{2}$ $S\frac{1}{2}$ NE,
 $W\frac{1}{2}$ NENW,
 $W\frac{1}{2}$ NW,
 $W\frac{1}{2}$ SENW,
SESENW,
 $SW\frac{1}{4}$,
 $SE\frac{1}{4}$

Section 24 $E\frac{1}{2}$ SENE,
 $S\frac{1}{2}$

T. 26 N., R. 3 E.,
Section 19, $E\frac{1}{2}$ NE,
 $E\frac{1}{2}$ NWNE,
SWNWNE,
 $S\frac{1}{2}$ NE,
 $S\frac{1}{2}$ $N\frac{1}{2}$ NW,
 $S\frac{1}{2}$ NW

Private Inholding

T. 26 N., R. 2 E.,
Section 9, $E\frac{1}{2}$ NE,

SENWNE,
NESWNE,
NESE,
SENWSE,
 $N\frac{1}{2}$ SESE,
SESESE

Section 17, $E\frac{1}{2}$ $E\frac{1}{2}$ NE

APPENDIX

Navajo Peak - Legal Description

T. 27 N., R. 2 E.,
Section 27, $SW\frac{1}{4}NW\frac{1}{4}$
Section 28, $NE\frac{1}{4}, SW\frac{1}{4}NW\frac{1}{4}, SE\frac{1}{4}NW\frac{1}{4}$
Section 29
Section 30
Section 31
Section 33, $NE\frac{1}{4}, SE\frac{1}{4}$
Section 34, $NW\frac{1}{4}, SW\frac{1}{4}$

T. 26 N., R. 1 E.,
Section 1

T. 26 N., R. 2 E.,
Section 1, $SW\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}, NW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4},$
 $SE\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}SW\frac{1}{4}, NW\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}, SE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$
Section 3
Section 4
Section 5
Section 6
Section 10
Section 11
Section 12 $NW\frac{1}{4}, SW\frac{1}{4}, SE\frac{1}{4}$
Section 13
Section 14, $NE\frac{1}{4}, SW\frac{1}{4}NW\frac{1}{4}, SW\frac{1}{4}, SE\frac{1}{4}$
Section 15, $NW\frac{1}{4}NE\frac{1}{4}, SW\frac{1}{4}NE\frac{1}{4}, SE\frac{1}{4}NE\frac{1}{4}, NW\frac{1}{4}, NE\frac{1}{4}SW\frac{1}{4}, NW\frac{1}{4}SW\frac{1}{4},$
 $NE\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}, SE\frac{1}{4}SW\frac{1}{4}, SE\frac{1}{4}$
Section 22, $NE\frac{1}{4}NE\frac{1}{4}, NW\frac{1}{4}NE\frac{1}{4}, NE\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}, NW\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}, SE\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}, NE\frac{1}{4}NE\frac{1}{4}SE\frac{1}{4},$
 $SE\frac{1}{4}NE\frac{1}{4}SE\frac{1}{4}$
Section 23
Section 24
Section 7, $SW\frac{1}{4}NW\frac{1}{4}, NW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}, SE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}, NW\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}SW\frac{1}{4},$
 $SE\frac{1}{4}SW\frac{1}{4}, SW\frac{1}{4}SE\frac{1}{4}, SW\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}, SE\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$
Section 18, $NE\frac{1}{4}, NW\frac{1}{4}, SE\frac{1}{4}$
Section 19, $NE\frac{1}{4}, NW\frac{1}{4}$

APPENDIX F

WILDERNESS ANALYSIS REPORT

SABINOSO WILDERNESS STUDY AREA

NM-010-055
ALBUQUERQUE DISTRICT

TAOS RESOURCE AREA



I. GENERAL DESCRIPTION

A. Location

The Sabinoso WSA is located in San Miguel County, New Mexico, approximately eight air miles northeast of Trujillo, New Mexico, twenty air miles northwest of Conchas Reservoir, and one mile due west of Sabinoso, New Mexico (Map F-1). The study area is included on four USGS topographical maps the Maes Quadrangle, the Sabinoso Quadrangle, the Canon Olguin Quadrangle, and the San Ramon Quadrangle.

B. Climate and Topography

The study area is composed of a series of high, narrow shelves surrounded by steep, rock-walled canyons. The western boundary runs along the bottom of Canon Largo, which enters the Canadian River at the Town of Sabinoso. The Largo is an ephemeral stream. The area ranges in elevation from 4,500 feet (1,500 meters) to 6,000 feet (2,000 meters).

The mean annual temperature for the Sabinoso region is 55° F. (13°C.). The temperature ranges from 90°F. (32° C.) during the summer months to 20° F. (70° C.) in the winter. July is usually the warmest month and January is the coldest.

Annual precipitation ranges from 14" - 18" (35.6 cm. - 45.7 cm.). Precipitation is mainly a result of spring and summer rainfall.

Prevailing winds are primarily from the south and southwest.

C. Land Status

The study area contains approximately 15,760 acres of public land and 320 acres of private inholdings. All subsurface holdings are under Federal ownership.

D. Access

Access into the majority of the public land portions of Sabinoso is limited to foot and horseback. Sabinoso is land-locked by privately owned lands therefore, legal public access must be acquired to allow visitors to enter the Sabinoso WSA without trespassing private land holdings.

Presently, the primary vehicular routes in the study area are to the western and southwestern boundaries. Access to these areas are via county roads from New Mexico State Road 104, twenty miles east of Las Vegas, New Mexico. The southeastern border can be reached by vehicle from the Town of Sanchez. Access was once attainable by crossing the Canadian River by bridge out of the Town of Sabinoso. In order to make this route passable for motor vehicles or horseback riders, it would be necessary to rebuild the bridge across the Canadian River. See Map F-2 for further clarification of these routes.

II. EXISTING RESOURCES

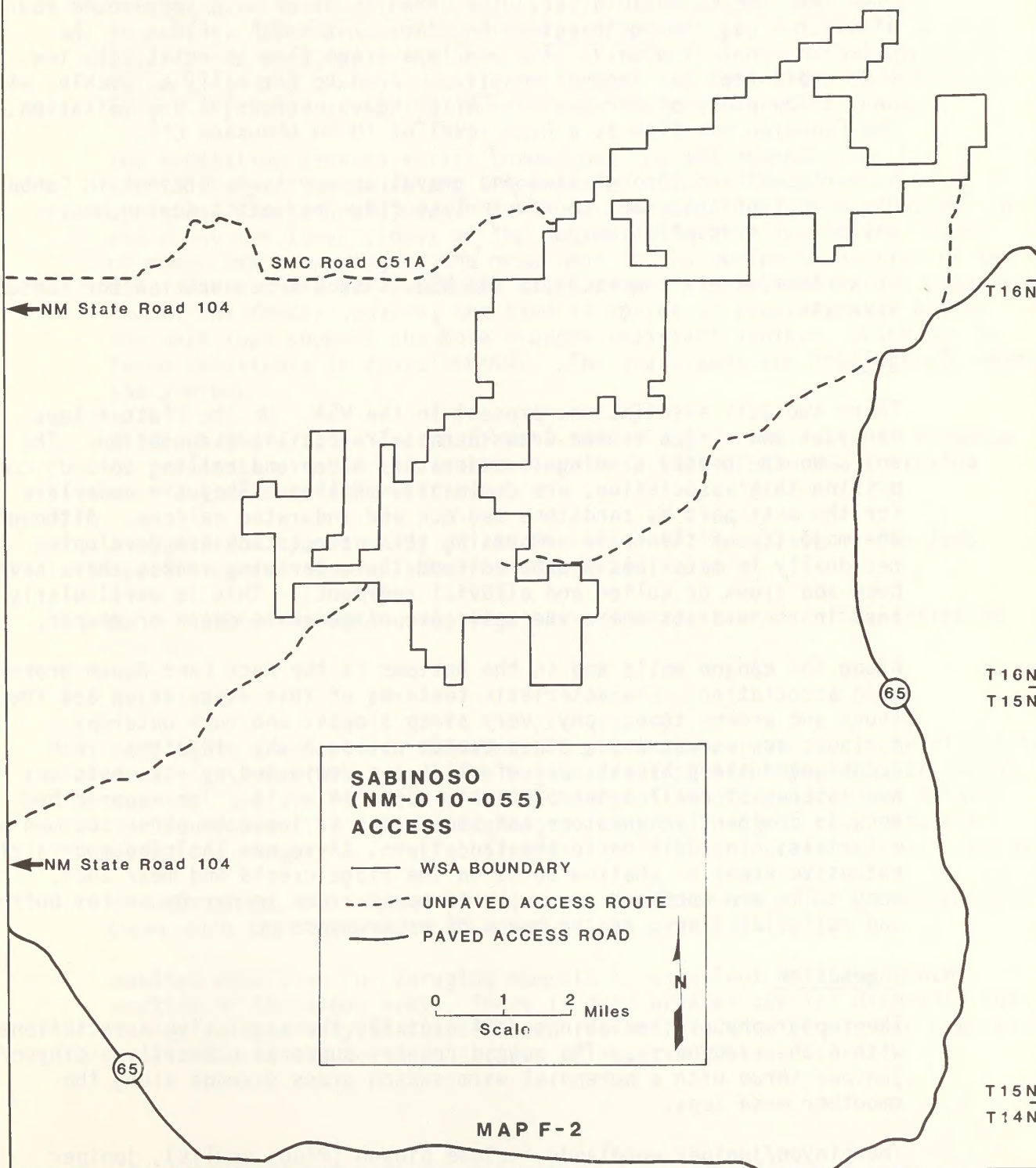
A. Geology

Geologic material found in the Sabinoso WSA consists of a mantle of flat-

R22E | R23E

R23E | R24E

T18N
T17N



lying Mesozoic sediments up to 2,000 feet thick and underlain by approximately 500 feet of Upper Paleozoic (Permian and Pennsylvanian sediments). The dominant surface feature is the Canadian Escarpment, a large east-northeast trending upland which forms a prominent rim capped by Cretaceous sandstones (Dakota & Misa Rica Formations), and situated approximately 1100 feet above the surrounding plain.

B. Water

The WSA lies between the Canon Largo and Lagartija Creek drainages which flow into the Canadian River. The Canadian River is a year-round source of water along the northeastern boundary of the WSA. Flows of the Canadian can vary widely. The yearly average flow is relatively low (100 cubic feet per second) and it can drop to virtually a trickle, with only a few pools of warm water. After heavy periods of precipitation, the Canadian can flow at a high level of 10-20 thousand CFS.

Subsurface flows through sand and gravel appear to be present in Canon Largo most of the year. A few surface flows may exist during heavy periods of precipitation.

If surface water is present in the WSA it should be purified for consumptive use.

C. Soils

There two soil associations present in the WSA. On the flatter tops of mesas and ridges is the Crews-Bernal-Travessilla association. The soils on the gently sloping to moderately steep and rolling uplands comprising this association, are dominantly shallow. They are underlain for the most part by sandstone bedrock and indurated caliche. Although the majority of the soils comprising this association are developing residually in materials weathered from the underlying rocks, there have been additions of eolian and alluvial sediments. This is particularly true in those cases where the soils are of moderate depth or deeper.

Along the canyon walls and in the bottoms is the Rock Land-Rough Broken Land association. Characteristic features of this association are the rough and broken topography, very steep slopes, and rock outcrops. Included are escarpments, steep canyon walls, rocky ridgetops, rock ledges, and steep breaks, all of which are dominated by rock outcrops and patches or small areas of highly variable soils. The exposed bedrock is dominantly sandstone and shale, but it included other sedimentary materials. In addition to the land types, there are included moderately extensive areas of shallow soils on the ridge crests and mesa tops. The deep soils are confined generally to small areas in narrow valley bottoms and colluvial slopes at the bases of escarpments.

D. Vegetation

The topography of the Sabinoso WSA dictates the vegetative associations within the study area. The rugged country supports primarily a pinyon/juniper shrub with a perennial warm season grass savanna along the smoother mesa tops.

The pinyon/juniper woodlands include pinyon (Pinus edulis), juniper (Juniperus spp.), and ponderosa pine (Pinus ponderosa). Understory

shrubs associated with these trees are wavyleaf oak (Quercus undulata), shinnery oak (Quercus havardii), mesquite (Prosopis juliflora), mountain mahogany (Cercocarpus montanus), berberis (Mahonia spp.) and a variety of cacti. Along the canyon bottoms, riparian species are found including cottonwood (Populus spp.) and willow (Salix spp.), where the water table is high and streams sometime flow.

The upper grasslands along the mesa tops are predominantly made up of blue grama (Bouteloua gracilis), hairy grama (Bouteloua hirsuta), side-oats/grama (Bouteloua curtipendula), little bluestem (Andropogon scoparius), sand dropseed (Sporobolus cryptandrus), and alkali sacaton (Sporobolus airoides). An abundance of rubber rabbitbrush (Chrysothamnus nauseosus) and cholla (Opuntia umbricata) are indicative of overgrazed range, which has developed primarily at the mouth of Canon Largo.

The vegetation density varies throughout the WSA depending on the availability of moisture and steepness of slope. The denser stands of ponderosa pine and pinyon/juniper woodlands are found in the bottomlands and along the lower slopes of the canyon. There is some thick stands of ponderosa occurring on the mesa tops in the southwest portion of the WSA. Where there are extremely steep slopes along Canon Largo, Lagartija Creek, and feeder canyons, the land is sparse of vegetation or barren. The mesa tops support the more drought resistant juniper, which can be found relatively in dense stands. The grasslands are interspersed among the juniper.

Although there is no record of past timber sales, the residual stumpage of ponderosa pine on the southwestern mesa tops of the WSA indicates previous selective harvesting.

A vegetation type summary of the Sabinoso WSA is on file in the Taos BLM Office and is available for inspection.

No threatened or endangered vegetative species have been identified in the WSA.

E. Wildlife

Habitat in the Sabinoso WSA, for all practical purposes, can be classified as a single habitat type. The vegetative type is pinyon/juniper shrubs and the landform is badlands. The badlands landform is chosen because the study area includes a mingling of canyons, ridges, rock outcrops, mesa tops, hogbacks, cliffs, arroyos, and even an occasional flat region.

In both cases, the vegetative type and the landform reflect a mingling of types such that separation of these is not practical.

Habitat condition for foraging mammals is excellent in the southern portion of the study area. There is much greater species diversity and forage availability in the southern reaches of Canon Olguin and Lagartija Creek than in the northern portion of the study area.

The area northern extending from the Canadian River up Canon Largo for 2-3 miles has been extremely disrupted by overgrazing. Utilization approximations on several species would include 50% or greater on cholla cactus, 90%-100% on mesquite, and rubber rabbitbrush has been so denuded that photosynthesis is inhibited. The majority of this area is under private ownership but, WSA land, which is adjacent to portions of private land and is not fenced, suffer the same conditions of overgrazing as the private sections. The remainder of the habitat within the WSA is generally in fair condition.

Major game species include: mule/deer (Odocoileus hemionus), coyote (Canis latrans), bobcat (Lynx rufus), grey fox (Urocyon cinereoargenteus), turkey (Meleagris gallopavo), and mourning dove (Zenaida macroura). The area also supports two introduced species not native to New Mexico, ibex (Capra siberica) and Barbary sheep (Ammotragus lervia).

Special Interest Species

The study area would appear to have a potentially high degree of use by birds of prey, especially cliff dwelling and nesting species. However, the only species observed during the nesting season have been the Red-tailed hawk and the American Kestrel. No nests have been observed and very few white-wash areas exist along the cliff rocks.

Other

There is a wide variety of passerine birds. The regions with the greatest density and diversity are the canyon bottoms and the rimrock areas. These two locations usually have the greatest structural diversity. Higher densities may also be influenced by springs and other water locations adjacent to the WSA.

A taxonomic list of probable and potential species which occur in the Sabinoso WSA is on file in the Taos BLM Office.

Threatened and Endangered Animals

Technically, the only potential endangered species that may be located within the Sabinoso WSA is the black-footed ferret (Mustela nigripes). This is highly unlikely as the habitat conditions are not present to support adequate prairie dog populations which are required for Black-footed ferrets.

F. Visual Resources

The Sabinoso WSA provides a striking contrast between its canyon lands and the surrounding rolling prairie.

Vegetation varies from riparian habitat along the ephemeral drainages consisting of cottonwoods and willows to sagebrush, blue gramma, and pinyon/juniper with some ponderosa pine along the higher elevations. Landscape colors are predominantly green, gray, and brown with some variations in the distant backgrounds. The overall feeling varies from one of isolation within the steep narrow canyons to vast openness above the canyon rims and on top of the mesas.

The interim classification for the Sabinoso Scenic Quality Rating Unit is rated as VRM Class II.



Views of Canyon Olguin from the southwestern end of the Sabinoso WSA. Note the ephemeral drainage on the canyon bottom.

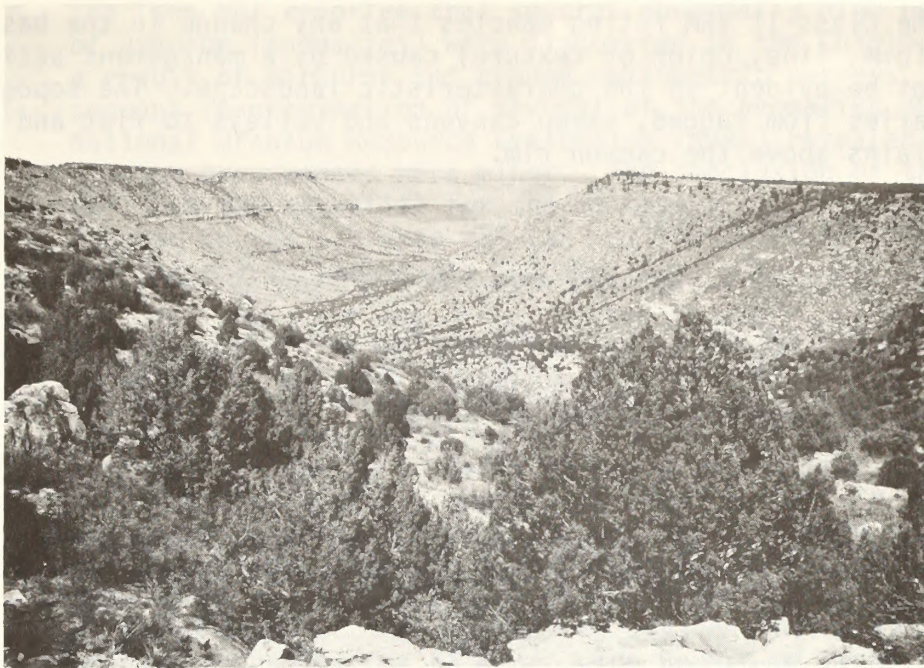




Remains of old homesteads are scattered throughout the Sabinoso WSA.



The Lagartija Creek, located on the southeast end of the WSA, is also an ephemeral water source.



View of Canyon Largo from atop a mesa at the northern end of the Sabinoso WSA.



View from atop a mesa on the southeastern boundary of the WSA overlooking the eastern plains of New Mexico.

The Class II VRM rating denotes that any change in the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape. The topographic relief varies from rugged, steep canyons and valleys to flat and rolling open plains above the canyon rim.

G. Cultural Resources

The proposed Wilderness Area has not been systematically surveyed. However, finds of artifacts in and near the area, and the known archaeological record of northeastern New Mexico suggests that the area contains a high density of archaeological sites dating from the Paleo Indian Period through homesteading and ranching.

H. Air

Air quality in the study area is excellent. There are no significant sources of particulate or gaseous emissions within thirty miles of the area.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

a) Leasable

The Sabinoso WSA is located within the Cuervo Basin. The basin has been classified by the U. S. Geological Survey as prospectively valuable for oil and gas. Nearly all of the WSA is presently under lease for oil and gas, but no drilling has been reported within the WSA. The Taos Resource Area's 1981 Mineral Resource Inventory (MRI) reported that only 6 wells were drilled within a radius of 25 miles from the WSA but none of the wells encountered hydrocarbons including the three wells that were drilled sufficiently deep enough to reach Precambrian rocks. While it appears that there is a sufficiently thick sequence of sedimentary rocks (2000 to 2500 feet) and many of the formations are known to produce petroleum products elsewhere, the WSA does not seem to contain either favorable source or reservoir rocks. Consequently, the potential for petroleum products in the WSA is concluded to be low.

Since none of the rocks found in the WSA are known to be significant sources of coal, and there are no reported occurrences or evidence of coal, the potential for the discovery of coal within the WSA is rated as very low.

b) Locatable

In past years some uranium exploration occurred in and around the Sabinoso WSA. No significant deposits were discovered. Activity is presently limited to three recently located mining claims (date of location: 10/1/81) that are located in the eastern portion of the WSA (T. 17 N., R. 24 E., Section 19: A11).

The Taos MRI reported that several abnormally high concentrations of uranium (anomalies) were discovered in the Chinle Formation as a result of airborne and ground radiometric surveys. However, subsequent re-examination of several of the anomalies during the National Uranium Resource Evaluation (NURE) revealed that the uranium occurrences were minor. The conclusion of the NURE study was that the potential for the discovery of a valuable uranium deposit in the Sabinoso WSA (as well as the rest of northeast New Mexico) in the Chinle and Morrison Formations was very low.

There is however, a difference of opinion concerning the uranium potential in the Sabinoso WSA. Uranium assessments from the Energy Reserves Group (Albuquerque, New Mexico) have given the Chinle Formation a very high rating for uranium potential. Its conclusions seem to be based on exploration efforts and the fact that the Chinle within the WSA is known to contain uranium. In addition, consultation with the New Mexico Bureau of Mines has indicated that, while no significant discoveries of uranium have been made, the presence of uranium in the WSA warrants a more detailed study of the area before any conclusion concerning the uranium potential can be made. The Bureau of Mines has indicated that a field team will be examining the area during (1982) and will be taking samples for analysis. Results of the tests are to be available for use in the Final Environmental Assessment and subsequent Wilderness suitability recommendations.

2. Non-Energy Minerals

a) Leasable

At present, no mineral related activity is occurring in the Sabinoso WSA pertaining to non-energy leasable minerals (phosphates, sodium, or potassium) and none is expected. While there are some 2,000-2,500 feet of sediments in the WSA, none of them are known to contain appreciable amounts of sodium potassium or phosphate. In addition, the geologic environment is such that deposits of these minerals are not expected to be found. Consequently, the potential for the discovery of valuable deposits of non-energy leasable minerals is considered to be very low.

b) Locatable

While no appreciable exploration or development efforts are known to have occurred for non-energy locatable minerals in the WSA, several base metals (copper, lead, zinc, and manganese) are known to occur in the Chinle Formation, associated with uranium. As a result of these occurrences, a moderately high potential for the discovery of valuable locatable minerals has been given to the WSA by Atlantic Richfield, probably based on exploration activity and geologic familiarity with the area.

Since so little exploration for locatable minerals has taken place in the Sabinoso WSA, the New Mexico Bureau of Mines is planning a field study of the area during (1982) to assess the potential for base metals. It plans to take samples for analysis (copper, lead, zinc, gold, as well as uranium) to determine if the area shows much potential for base-metal occurrence, especially "red-bed" copper.

c) Saleable

While the sedimentary sequence is relatively thick (2,000 to 2,500 feet) in the Sabinoso WSA, it is too easily broken and too erosive to be considered a good source of aggregate. In addition, the general area contains a considerable source of aggregate (Testiary gravels) in more convenient locations that can satisfy any future needs. Consequently, the potential for saleable minerals in the WSA is considered to be very low.

B. Watershed

Currently, there are no productive uses anywhere in the Sabinoso WSA for watershed purposes. There are no potential plans for watershed improvement in the foreseeable future.

C. Livestock Grazing

Nine grazing allotments are located within the Sabinoso WSA. The allotments found within the WSA are located on Map F-3. Table F-1 is a summary of the existing livestock use within the WSA.

Current grazing use is entirely for cattle. The primary use period is yearlong. The majority of allotments are fully stocked and have cow-calf operations.

There are several range improvements in the WSA (See Map F-3). The majority of improvements are allotment boundary fences, stocktanks, and trails that require maintenance on a periodic basis.

Access to these improvements are primarily via cross-country traveling, utilizing unmaintained trails. Most maintenance must be performed on horse-back, except in the southern region where improvements are accessible by vehicle.

Potential range improvements within the WSA may include thinning of pinyon/juniper woodlands and reseeding with palatable forbs and grasses. More fencelines and stocktanks may also be considered as potential improvements.

Presently, an amendment to the Taos Resource Area Management Framework Plan is being considered. This amendment may include proposals for range management in the Sabinoso area.

D. Forest Products

Currently, no forest products are under a contract or permit use. The cutting of trees for home fuel wood does illegally take place. There is approximately 130 acres of ponderosa pine with 20,000 board feet of potential commercial timber and 1,000 acres of pinyon/juniper with the potential 3,000 cords of wood for fuelwood use.

In order to enhance the productivity and regeneration of existing stands of ponderosa pine, selective thinning practices should be applied. Thinning would include extensive pinyon and juniper removal from among the ponderosa stands.

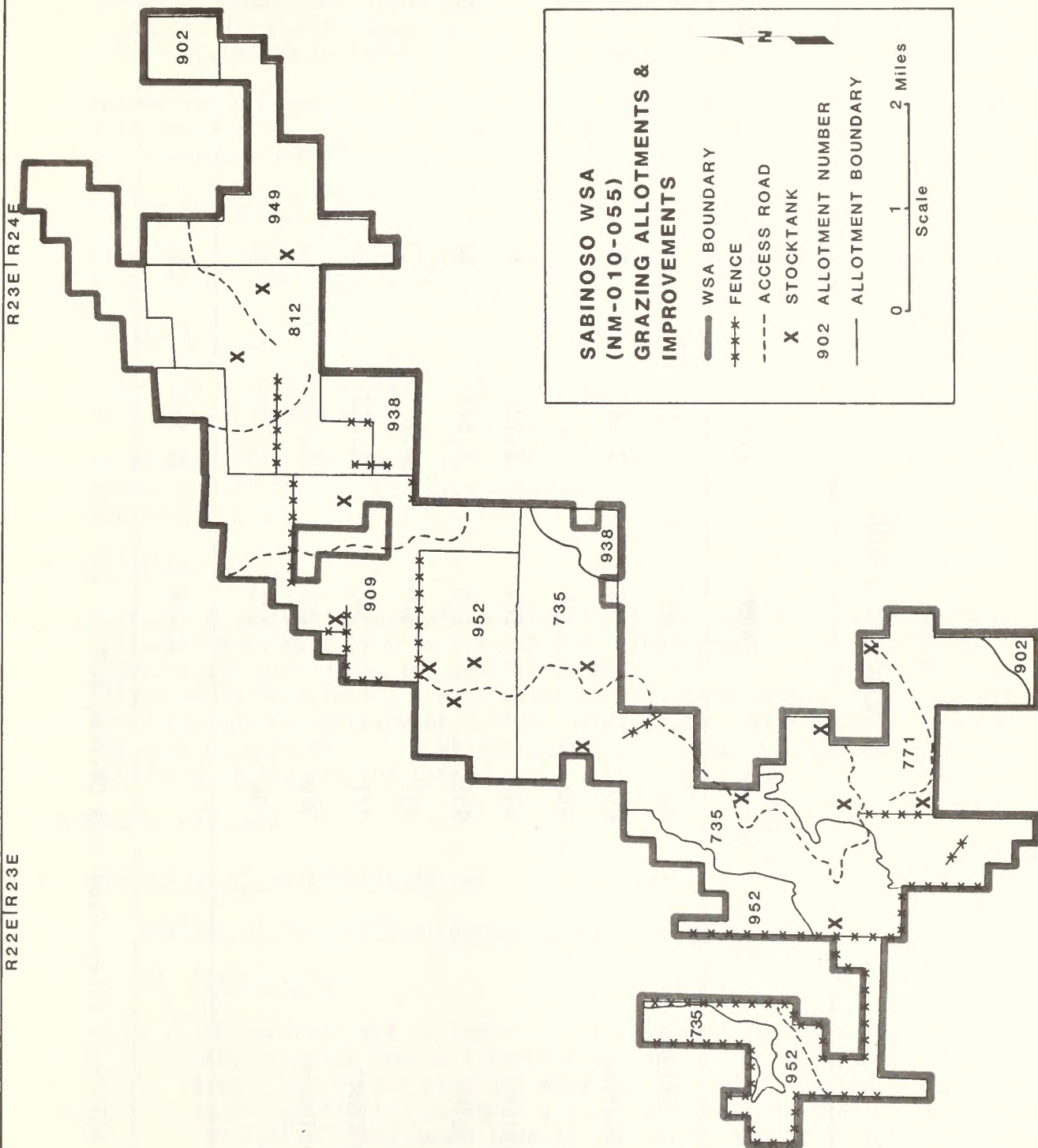
R22E | R23E

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**SABINOSO WSA
(NM-010-055)
GRAZING ALLOTMENTS &
IMPROVEMENTS**

- WSA BOUNDARY
 - *** FENCE
 - - - ACCESS ROAD
 - X STOCKTANK
 - 902 ALLOTMENT NUMBER
 - ALLOTMENT BOUNDARY
- 0 1 2 Miles
Scale



MAP F-3

TABLE F-1
ALLOTMENT SUMMARY

Allotment Name	Allotment Number	AUMS	Acres	Number of Cattle	Season of Use
Arroyo Del Mesteno	902	112	615	9	03/01-2/28
Sabinoso Squeeze	812	168	1,840	20	06/15-10/15
Upton	938	149	851	12	03/01-2/28
Canyon Vivian	909	189	2,782	16	03/01-2/28
Canyon Olguin	952	165	1,479	14	03/01-2/28
Rimrock	735	870	4,781	73	03/01-2/28
Lagartija Creek	771	380	1,710	69	10/01-2/28
Canyon Sabinoso	949	256	1,405	21	03/01-2/28
Canyon	736	165	1,479	14	03/01-2/28
TOTALS		2,454	16,942	248	

Source: Allotment files, Taos Area Office, BLM.

E. Recreation

Very little known recreation activity occurs within this remote area. Local ranchers frequent the canyon on horseback and some ORV use does occur where vehicle access is available. No fishing use occurs since no fisheries habitat is available. Hunting is also limited by the rugged terrain. Additional information on the hunting pressure and success rates for New Mexico Game and Fish Department's Game Management Unit Number 42, which includes the Sabinoso WSA is on file at BLM Taos Office.

Recreation use may be increased if legal access to the WSA was obtained. This would allow visitors to gain access to the Sabinoso WSA without trespassing private land.

F. Native American Uses

No areas currently of religious significance to Native Americans are known within the study area.

G. Realty Actions

There are no rights-of-way, withdrawals, easements, or permits associated with the Sabinoso WSA.

It may be noted that there is a 320 acre parcel of private land within the boundaries of the WSA to which reasonable access must be provided. (See Map F-1).

H. Wildlife

Increase in potential use of the area by large mammals could be obtained through improvement of wildlife habitat. Improvements can be made by vegetative manipulation and additional water sources. Vegetative manipulation would be directed specifically at the northern end of the WSA for foraging habitat improvement. Added water sources would need to be in the form of catchments. A Wildlife Habitat Management Plan has not been scheduled at the present time.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a) Naturalness

The Sabinoso WSA is comprised of vast open expanses and rugged canyons which create a feeling of overall naturalness for the area. The vistas from the mesa tops are exhilarating and appear to be indefinite, as the visitor looks out over the rolling prairie. The lack of many human impacts within the WSA accentuates its natural appearance.

The man-made structures and human activities which do appear within and surrounding the WSA are screened by vegetation and topography. Man's evidence of intrusion, mainly trails and range improvements, are limited by the rugged country. The WSA is

mostly inaccessible to motor vehicles which has resulted in less human impacts (power lines, residential or commercial development, etc.) than would normally occur within such a large expanse of land.

b) Solitude

The opportunities for solitude are unlimited in this vast, open canyon area. The isolation of the WSA from any large population areas and the few vehicular access points into the WSA have naturally restricted the number of people who visit the area. The rugged canyons and areas of dense vegetation also enhance the feeling of being alone for any hiker or horseback rider.

If legal access to the WSA were obtained, it would become unnecessary for visitors to cross private land to reach the study area boundaries. This action may result in the encouragement of more visitors and a reduction in the solitude experience. Wilderness designation itself, through its public "appeal", may produce similar reductions to this particular wilderness value. Therefore, management actions would be needed to preserve the very pristine, unique solitude experience of the Sabinoso Area.

c) Recreation

Opportunities for primitive and unconfined recreation activities are somewhat limited in the Sabinoso Area due to its access problems. An increase in opportunities for recreation would most likely occur if the Bureau of Land Management acquired legal public access to the Sabinoso WSA as part of Wilderness Management policies. Recreation opportunities are limited to some degree by the lack of water sources. Some stock catchments retain water after heavy rains and there are ephemeral drainages that also flow following rains, but the majority of the time there are no dependable water sources available. Recreational opportunities include hiking, camping, horseback riding, and hunting. These activities may take place, but all water must be carried in for human and animal consumption. The extreme ruggedness and remoteness of the area makes this a very dangerous place to be without water.

2. Features

The most obvious special feature of Sabinoso is its geology and topography. The location of a large, deep canyon area surrounded by the wide open eastern New Mexico plains is unique to this region. The deep incision cut into the flat topography by Canon Olguin, Canon Largo, and Lagartija Creek create a significant topographical, as well as geological impact in this open expanse of hundreds of square miles of rolling prairies and mesa tops. The canyons expose geological displays of stratified rock and serve as excellent teaching grounds for those with interests in earth history.

Another significant feature is Sabinoso's outstanding scenic qualities. The tremendous view from atop the mesas make the Sabinoso area a unique viewing point for hikers and sightseers. The isolation and solitude within the deep remote canyons may also qualify as one of the special features of the Sabinoso Area.

3. Multiple Resource Benefits

The Sabinoso WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of the law and would provide a greater degree of long term protection for these natural values than would administrative designations available to the Bureau.

A more detailed discussion of multiple resource benefits may be found under the impacts of the All Wilderness Alternative.

4. Diversity

a) Ecosystems Present

Ecosystem/landform diversity was analyzed using the Baily-Kuchler system to classify the potential natural vegetation expected to occur in Wilderness Study Areas in New Mexico.

According to this system, the potential natural vegetation of the Sabinoso WSA consists of 6,700 acres of conifer forests and pinyon/juniper woodlands, 7,160 acres of midland grasses, and 1,900 acres of barren land. The large acreage of barren land is attributed to steep rocky cliffs of the canyons.

b) Distance to Population Center

The study is within three hours driving time of Albuquerque, New Mexico.

B. Manageability

Effective management of the Sabinoso WSA would include consideration of private lands within the study area, legal and physical access, rights-of-way, existing range uses and improvements, and development of dependable water sources. There is one tract of 320 acres of private land within the Sabinoso WSA (See Map F-1) which must be provided reasonable access regardless of any protective designation.

Primary vehicular access to the WSA is available through Canon Olguin and Lagartija Creek but, neither of these routes or any others allow for access without crossing private land. The management of Sabinoso would benefit substantially if legal access was acquired by the Bureau of Land Management, whether Sabinoso was designated Wilderness or not. This would allow for easier entry and exit for Bureau of Land Management employees, leasees, and the public. It should be pointed out that there would be a potential for increase in public use of the Sabinoso WSA if legal access was resolved. But, it is not foreseen that any access related problems with private land would evolve in the event legal access was acquired. The natural topographical barriers afforded by the steep, rugged canyons would ensure isolation and protect the remoteness of the area.

The possibility exists for potential mineral development in the WSA, however the Taos MRI indicates this potential would be low. The rough terrain features and problem with access into the area would also hinder in the development of any minerals should they be discovered.

The overall management of Sabinoso as a Wilderness Area would develop few problems or conflicts with other resources. This factor makes Sabinoso highly attractive for Wilderness designation.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement for the Sabinoso WSA has included input during the 1979 Rio Grande Management Framework Plan (MFP), input throughout the Taos Resource Area Roadless Study and resulting WSA recommendation. There were also two open houses held for public input regarding the Sabinoso WSA. One was held in Albuquerque, New Mexico on March 4, 1982, and the other in Taos, New Mexico on March 18, 1982. Comments received were generally in support of Wilderness designation. Some ranchers in the vicinity of the WSA had relevant concerns regarding what impacts potential Wilderness designation would have on their livestock operations.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 15,760 acres of public land within Sabinoso WSA would be recommended as suitable for wilderness designation. If designated as wilderness, existing and potential uses (See Section 3, Existing and Potential Uses) would be regulated by the Wilderness Management Policy (1981).

1. Impacts to Minerals

Wilderness designation would limit mineral exploration and development. However, this impact is currently judged to be low based upon existing information which shows little chance of commercial mineral development. This could change, however, with studies being conducted by the Bureau of Mines.

2. Impacts to Other Resources and Uses

a) Watershed

The watershed is currently stable within the Sabinoso WSA. Designation of Sabinoso as Wilderness will protect the watershed through prevention of any major surface disturbance which may otherwise be allowed to take place. There are presently no watershed projects or planned for the Sabinoso Area.

b) Livestock Grazing

It is anticipated that the livestock operations within the WSA may be impacted if the entire WSA were designated Wilderness. These effects would be associated with the necessary and frequent livestock and range improvement checks required for a viable livestock operation. Limitations on vehicular use, maintenance, and construction of range improvements would decrease the flexibility for the users. There are presently no plans proposed for the vegetative manipulation within the study area so the impacts are expected to be low.

c) Forest Products

This alternative would prevent the potential timber harvest of the 20,000 board feet of ponderosa pine and 3,000 cords of pinyon/juniper. However, the very limited access and steep rugged terrain on which these products are located limit the potential for harvest. There are presently no plans for timber harvest in the WSA, so the impact is expected to be low.

d) Recreation

This alternative would provide long term protection to a unique portion of eastern New Mexico that has been undiscovered by those seeking a solitude wilderness experience. This area has largely been a work place and playground of a relatively small number of locals and ranchers. Public access would be made available if the area was designated as wilderness.

The seclusion offered by this area could be impacted by increased public awareness and access and result in an increase in use. These impacts are expected to be minimal though, due to lack of water, ruggedness of the terrain and the few access points. These aspects reduce the desirability of the area for many, and "Wilderness" designation may not attract the large numbers seen at other less demanding Wilderness Areas. Based upon inquiries from local ranchers, there would also be the potential for commercial horseback rental at trailhead access points which may be desirable for local ranchers. The present hunter use patterns would not be altered because of the difficulty of access already limits hunting use primarily to horseback.

e) Native American

Designation of a Wilderness Area will minimize impacts on cultural sites in the Sabinoso area through protective management and restriction of vehicular access.

f) Wildlife

This area currently has a high degree of habitat privacy. Wilderness designation may lessen this attribute or preserve it depending on the demand and use of the area by recreationists. There are currently no planned actions that would be negated by this alternative.

B. No Action

Under the No Action alternative the entire 15,760 acres of the Sabinoso WSA would be recommended unsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses (See Section 3, Existing and Potential Uses) would continue without regard to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (1979).

1. Impacts to Wilderness Values

The wilderness values and special features of the Sabinoso WSA would not be provided the long-term protection through Congressional action. Management of the area as specified in the existing land use plans would be subject to change in the long term.

2. Impacts to Other Resources and Uses

a) Minerals

No impacts to minerals are expected under this alternative because exploration for minerals could continue and the opportunity for development is available.

b) Watershed

Taking No Action would maintain the existing watershed conditions. The isolation and rough terrain of the area limit any impacts on watershed by restricting surface disturbing activities.

c) Livestock Grazing

There would be no impacts to the grazing program under this alternative since use adjustments or additional cost and restriction on range improvements are not expected to occur.

d) Timber Harvest

Though 20,000 board feet of potential commercial timber and a potential 3,000 cords of fuelwood have been identified in the WSA, the legal access problem and the rough terrain would indicate that the potential for harvesting these products is low and would be costly.

e) Recreation

This alternative would not greatly impact recreation in the study area because lack of access would continue and opportunities for recreation use would be limited.

f) Native American

Not designating the area as Wilderness will have no immediate impacts on cultural resources in the area.

g) Wildlife

There are no foreseeable impacts on wildlife within the WSA under this alternative because of the limited use and resource development the area is likely to receive.

VII. RECOMMENDED ACTION

A. Proposed Action Description

It is proposed that the entire Sabinoso WSA be recommended as suitable for Wilderness designation.

B. Rationale

Wilderness designation is recommended for the entire WSA due to its very high wilderness values and low conflicts Wilderness designation would cause to other resources.

The canyon lands of this WSA present a striking contrast to the surrounding rolling prairie. The steep vertical cliffs and lack of human impacts make the WSA highly scenic and extremely rugged. The topography of the WSA makes it very manageable as Wilderness. Wilderness designation would provide the long term protection of law to insure these values remain.

Wilderness designation would have little impact on grazing and mineral uses of the WSA. Grazing Management is already done primarily by non-motorized means and official restrictions of motorized equipment would have little effect. The minerals potential of the WSA is currently judged to be low and therefore would sustain little impact from Wilderness designation.

C. Consistency with Other Plans

At this time, there are no known inconsistencies between the recommended action and the policies of local, State and Federal plans. Coordination and consultation with these other agencies will continue during the public comment period on the Draft EA.

APPENDIX G

WILDERNESS ANALYSIS REPORT

SAN ANTONIO WILDERNESS STUDY AREA

NM-010-035
ALBUQUERQUE DISTRICT

TAOS RESOURCE AREA



I. GENERAL DESCRIPTION OF SAN ANTONIO WILDERNESS STUDY AREA

A. Location

The San Antonio WSA is located in Taos County, New Mexico, northwest of San Antonio Mountain, approximately six miles southwest of Antonito, Colorado and 12 miles north of Tres Piedras, New Mexico (Map G-1). The total area is included on the Los Pinos quadrangle USGS topographical map. Refer to the Appendix for a legal description of the study area.

B. Climate and Topography

The study area is composed of broad, gently rolling sagebrush and grass plains bisected north to south by the 200 foot deep Rio San Antonio Canyon. The area ranges in elevation from 7,900 feet (2,633 meters) to 8,835 feet (2,945 meters). The mean annual temperature for the San Antonio Mountain region is 44° F. (22° C.). The temperature ranges from 80° F. (27° C.) during the summer months to 8° F. (-49° C.) in winter. July is usually the warmest month and January is the coldest. Cold air drainage along the Rio San Antonio canyon may result in local differences in temperature. The canyon bottom may occasionally have temperatures lower than what is normally recorded for the general area.

The first killing frost occurs around September 20th. Frost conditions can usually be expected to remain until May 30th, resulting in an average of 120 frost-free days.

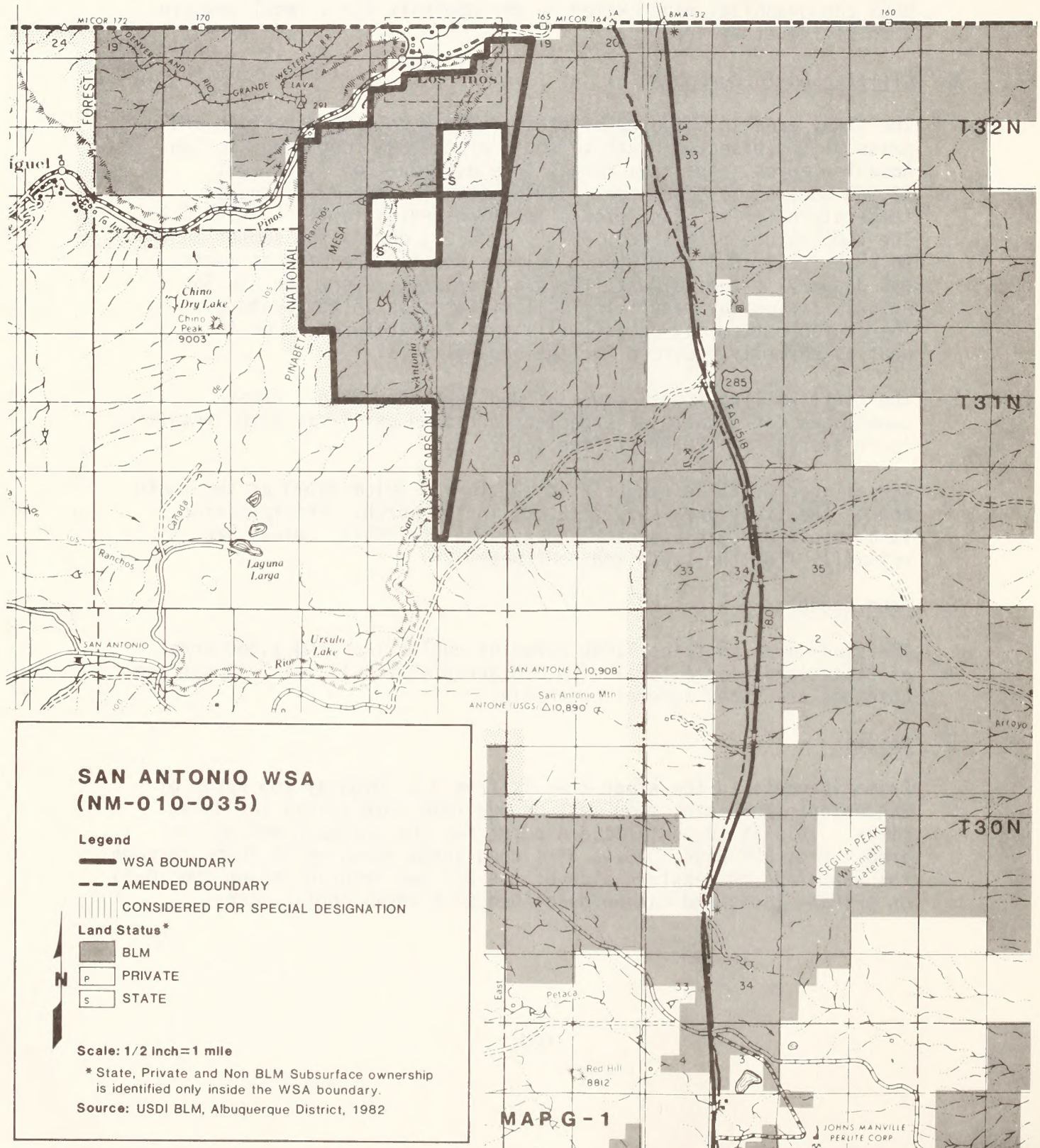
Annual precipitation ranges from 12" to 15" (31cm-38cm) at the south end of the study area and 9" (20cm) in the north. Precipitation is a result of both snowpack and seasonal rainfall. Winds are primarily from the south and southwest.

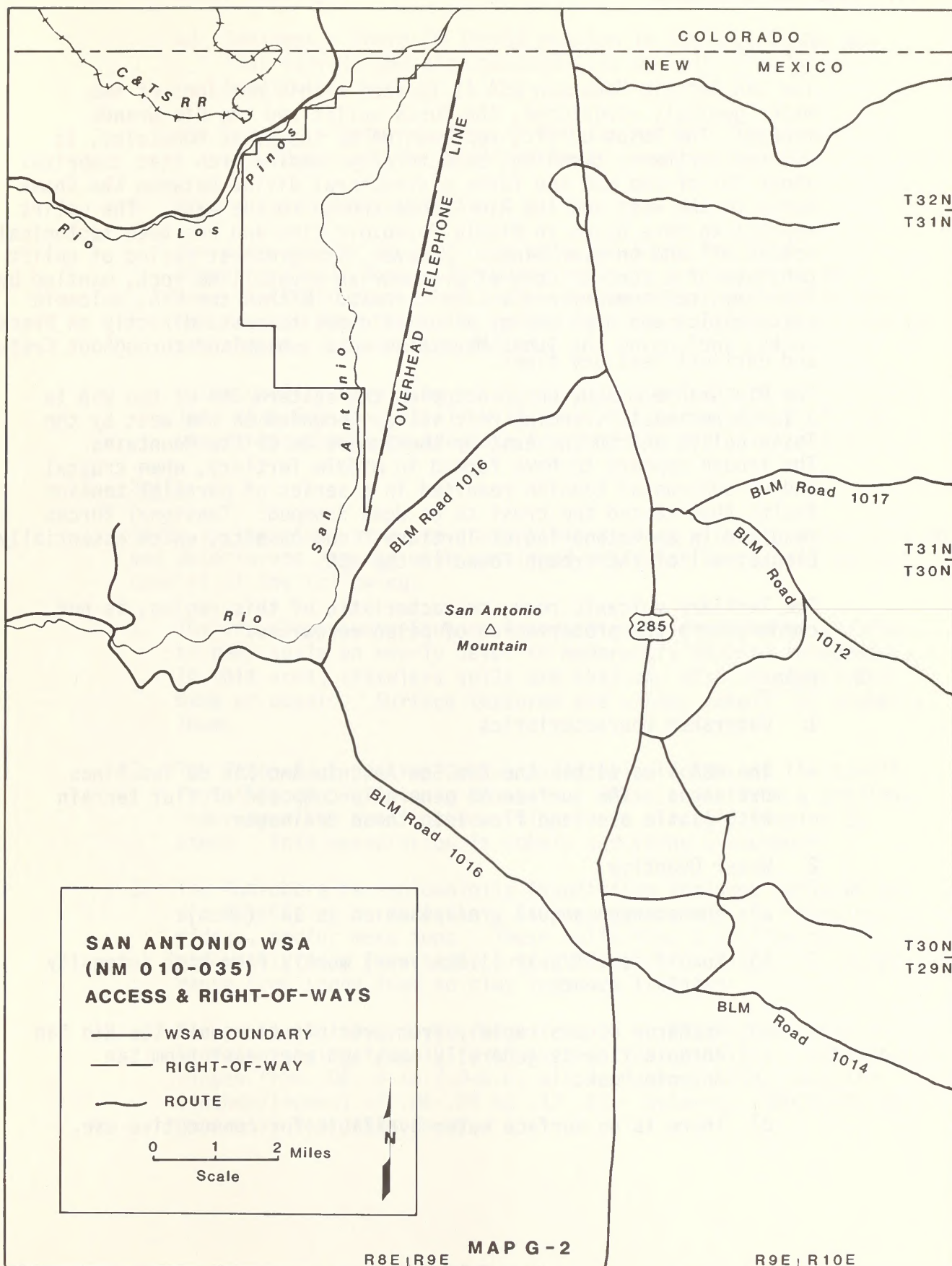
C. Land Status

The study area contains 7,050 acres of public land and 1,280 acres of State lands for a total of 8,330 acres (Map G-1). All subsurface holdings are under federal ownership.

D. Access

Primary access to the study area is from U.S. Highway 285 north of San Antonio Mountain, then west on BLM Road 1016 (dirt) for three miles. This is the only access point for the southern end of the area. From BLM Road 1016, a dirt road leads north which loops through the WSA along the eastern side of the Rio San Antonio canyon (Map G-2) on private lands and can be described as a legal public access.





II. EXISTING RESOURCES

A. Geology

The San Antonio Mountain WSA is located within portions of two major geologic structures, the Tusas uplift and the Rio Grande trough. The Tusas uplift, represented by the Tusas Mountains, is a large northwest trending, structurally complex arch that comprises about 20% of the WSA and forms a structural divide between the Chama Basin to the west and the Rio Grande trough to the east. The uplift appears to have begun in Middle Paleozoic time and has been tectonically active off and on ever since. However, its greatest period of uplift consists of a central core of precambrian crystalline rock, mantled by Tertiary, sedimentary, and volcanic rocks. Within the WSA, volcanic pyroclastics and high energy alluvial deposits rests directly on Precambrian rocks, indicating the Tusas Mountains were a highland throughout Cretaceous and earliest Tertiary times.

The Rio Grande trough, which occupies the eastern 80% of the WSA is a large northeast trending rift valley, bounded on the west by the Tusas uplift and on the east by the Sangre de Cristo Mountains. The trough appears to have formed in middle Tertiary, when crustal and/or subcrustal tension resulted in a series of parallel tension faults that caused the crust to be down dropped. Tensional forces resulted in an outpouring of Tertiary flood basalts, which essentially, blanket all of the trough found in the WSA.

The Tertiary volcanic rock, characteristic of this region, is not conducive to the preservation of paleo resources.

B. Water

1. Watershed Characteristics

The WSA lies within the Rio San Antonio and Rio de los Pinos drainages. The surface is generally composed of flat terrain with little overland flow into these drainages.

2. Water Quantity

- a) The average annual precipitation is 14" (36cm).
- b) Runoff is .5"/year (1.3cm/year) mostly from high intensity rainfall events.
- c) Recharge occurs rapidly from precipitation, and the Rio San Antonio flow is generally east and northeast from San Antonio Peak.
- d) There is no surface water available for consumptive use.

3. Water Quality

- a) Sediment - There is little erosion in the WSA due to the flat terrain and high permeability of soil underlying basalt.
- b) Streams - Water quality of Rio San Antonio is unknown but should be good to excellent based on watershed characteristics.

4. Ground Water Availabilities

The main aquifer is contoured with the Santa Fe group of Andesite-basalt lava. The water table is estimated to be near the 7,500 foot level with recharge occurring rapidly from San Antonio Peak Mountain, to the west, and surface precipitation and seepage from Rio San Antonio.

Water quality should be excellent with total dissolved solids of less than 500 ppm. Yield will vary with permeability of the basalt but should be adequate for domestic and livestock use.

C. Soils

Soils in the study area are susceptible to both wind and water erosion and deteriorate rapidly with continued vehicular use. Soil types consist of the following:

1. The Travelers-Luhon-Stunner Association is composed of shallow to deep soils on nearly level to moderately sloping topography. In this area, travelers soils are shallow, with an underlying base of basalt. Surface textures are stony, cobbly, or gravelly loam.
2. The Raton-Rock Outcrop-Orejas Association occurs on the basalt foothills of San Antonio Mountain. These soils from a shallow layer over the basalt base. Slopes are strongly sloping to steep. This association is cobbly and stony throughout.
3. The Eutroboralfs-Haploboralfs Association includes soils which are developing on moderately sloping steep mountain sideslopes, ridges, and/or mesa tops. These soils from a shallow to moderately deep layer over tuff pumice or rhyolites. Textures range from sandy loam to clay loam.

Slopes in the study area range from 2% to 50% with a depth of bedrock ranging from 10 to 60 inches. Permeability (inches/hour) ranges from .06-.6 to 2.0-6.0, with a water-holding capacity (inches/inches) of .06-.09 to .17-.21. Salinity (MMHOS/CM) is generally less than four.

D. Vegetation

Two major vegetation types exist in the study area. Approximately 95% of the area is a rolling upland covered with a variety of low growing vegetation. The remaining area is a canyon/riparian type with considerable diversity of vegetation.

Rolling uplands consist of flat to gently rolling topography. There is a consistent 700 foot elevation drop from south to north. The gradient drop is approximately 100 feet per mile. The southwest corner of the study area has slightly more of an elevation drop and is bisected with small drainages consisting of sparsely scattered evergreens. The major plant species found in the rolling uplands are sagebrush (Artemesia spp.), broom snakeweed (Xanthocephalum sarothrae), winterfat (Eurotia lanata), and several varieties of grasses (blue grama Bouteloua gracilis, western wheatgrass - Agropyron smithii, etc.).

The Rio San Antonio flows through a narrow gorge from south to north bisecting the study area. The canyon walls vary from cliffs to large boulders with areas of shallow soil deposits. There is considerable diversity in vegetation throughout the canyon. Vertical diversity can be seen from the rim to the streambed. Aspect diversity is obvious due to the considerable amount of meandering of the stream and the resulting exposures. Species composition also varies with the overall elevation drop as the river flows northward.

The canyon walls consist primarily of conifer woodlands. The major woodland species are pinyon pine (Pinus edulis), Rocky Mountain juniper (Juniperus scopulorum), and Douglas fir (Pseudotsuga menziesii).

Lying adjacent to the Rio San Antonio is a riparian woodland. Trees associated with this intermittent stream include cottonwood (Populus spp.), willow (Salix spp.), and box elder (Acer negundo). Understory shrubs consist of snowberry (Symphocarpus spp.), golden currant (Ribes aureum), gooseberry (Ribes leptanthum) and mountain mahogany (Cercocarpus montanus). Various grass species are found along the riparian zone, included are the following: side-oats grama (Bouteloua curtipendula), pinyon ricegrass (Piptochaetium fimbriatum), Indian ricegrass (Oryzopsis hymenoides), Kentucky blue grass (Poa pratensis), bottlebrush squirreltail (Sitanion lystrich), western wheatgrass, and blue grama.

For further information on vegetative associations in the San Antonio WSA contact the Taos Resource Area Office.

Threatened and Endangered Plants

No threatened or endangered plants are presently recognized as being indigenous to this locality or known to occur within the study area.

E. Wildlife

A probable species/occurrence list comprised of faunal species that either reside or frequent the described area is on file at the Area

Office. Many of the faunal species occur in this area because of the juxtapositional influences of nearby forest lands, and the presence of a very diverse, but narrow, canyon that bisects the study area.

The "San Antonio Mountain" and Atencio" Wildlife Habitat Improvement Areas are located within the WSA. These areas have been reseeded for the benefit of both range and wildlife (See Figures G-3 & 4).

The two general habitat types which exist within the study area have been described under the section on vegetation. Refer to the permanent documentation file for a detailed classification of habitats included in the general vegetation types. The rolling upland type supports such small game species as the Nuttall's cottontail (Sylvilagus nuttalli), the white-tailed jack rabbit (Lepus townsendii), and the coyote (Canis latrans). Pronghorn (Antilocarpa americana) is the single most important big game species. The region is also utilized as a hunting ground by various species of raptors.

Important animal species which utilize the riparian zone are the bobcat (Lynx rufus) and the grey fox (Urocyon cinereoargenteus). The mountain lion (Felix concolor) may also frequent the area. Various species of raptors utilize the canyon for nesting sites. A diverse number of passerine birds also inhabit the gorge.

Due to intermittent flows, the Rio San Antonio does not support a game fishery.

Threatened and Endangered Animals

The New Mexico Department of Game and Fish concur that nine Threatened or Endangered species could possibly occur in Taos County. Of the species listed, the only animals likely to frequent the study area and have reportedly been sighted are the bald eagle (Haliaeetus leucocephalus), osprey (Pandion haliaetus), and peregrine falcon (Falco peregrinus).

F. Visual Resources

The San Antonio Scenic Quality Rating Unit is rated as VRM classes II and III. The topographic relief is divided into two distinct types: 1) flat open plain and 2) the river canyons of the Rio de Los Pinos and the Rio San Antonio (Figures G-1 through G-4).

Vegetation varies from riparian habitat in the river canyons to dry sagebrush and pinyon-juniper in the flat open plain. Landscape colors are predominately green, gray, and brown with some variations in the distant backgrounds. The overall feeling is one of open expanses contrasted by a deep incision in the flat plains produced by the two river canyons which abruptly drop out of sight.

The Class II river canyon areas denote that any change in the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape. The Class III rated open plains area indicates that changes in the basic elements caused by a management activity may be evident, but



FIGURE 1 View from Rio San Antonio Canyon looking southeast at San Antonio Mountain.



FIGURE 2 The Rio San Antonio flows through the canyon from October through June. Irrigational diversions upstream dry up the creek during the summer months.

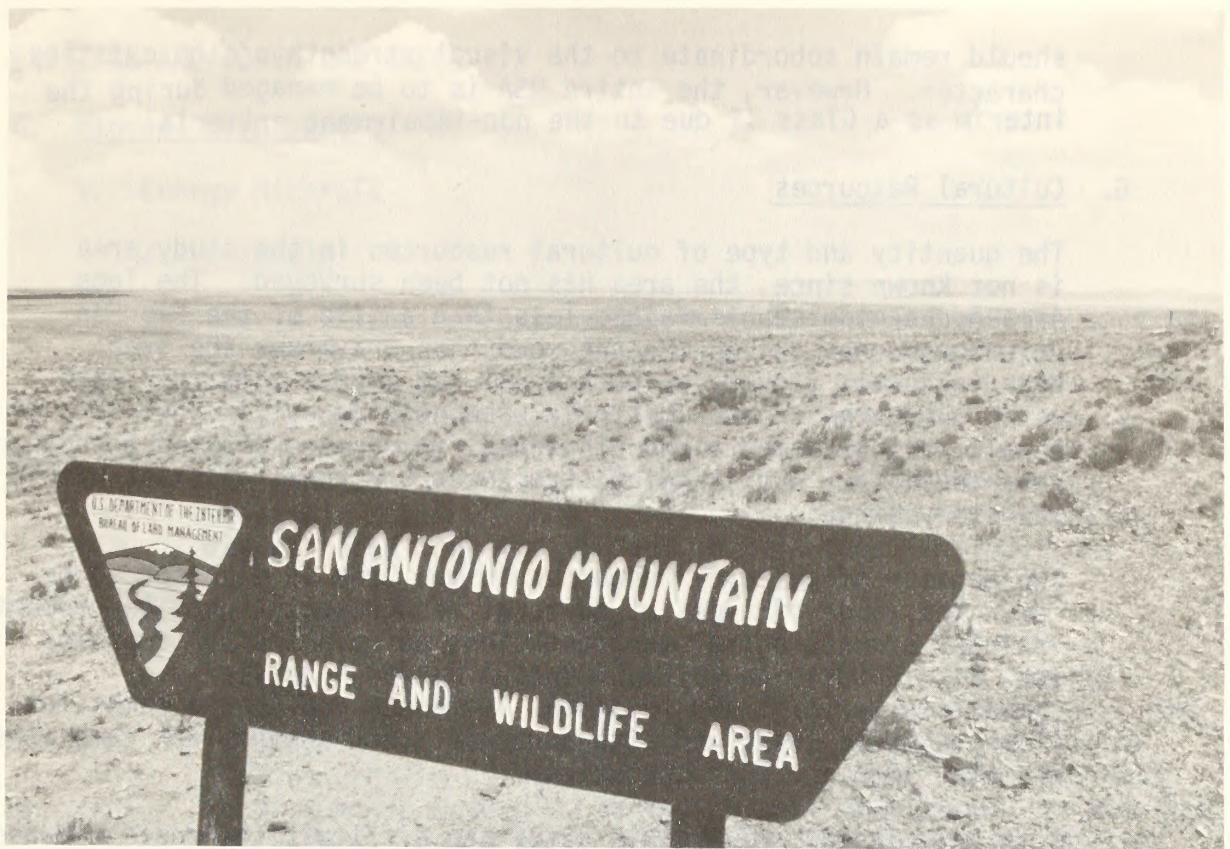


FIGURE 3 The San Antonio Mountain Range and Wildlife Area which includes a portion of the WSA.



FIGURE 4 The Atencio Wildlife Habitat Improvement Area located at the southern end of the San Antonio WSA. The view to the northwest is of the rim of the Rio San Antonio Canyon.

should remain subordinate to the visual strength of the existing character. However, the entire WSA is to be managed during the interim as a Class II due to the non-impairment criteria.

G. Cultural Resources

The quantity and type of cultural resources in the study area is not known since, the area has not been surveyed. The Taos Area Archaeologist has walked less than a mile of the Rio San Antonio and has driven the one road that traverses the area. Non-diagnostic lithics of both local and exotic materials were noted along the river. Historic sheepherding camps consisting of basalt wall alinements and discarded tin cans were noted throughout the study area. No standing structures are known to exist within the study area.

The density of cultural resources in the area is expected to be low. The range of types of cultural resources that may be present includes archaeological manifestations of PaleoIndian campsites (ca. B.C. 9500 to ca. B.C. 5500 to A.D. 400), Anasazi campsites (ca. A.D. 400 to 1400), Commanche and Apache campsites from the 17th, 18th, and 19th centuries, and sheepherder campsites from the 19th and 20th centuries.

Both PaleoIndian and Archaic sites are difficult to locate because of their low visibility. Artifactual deposits are often sparse and at least partially obscured by soil deposits. Minimal disturbance can damage or even completely destroy the information potential of one of these sites.

No Anasazi villages are known or expected to be located within the study area. However, hunting camps, quarry sites, and some plant processing sites are probable.

The remains of 19th and 20th century sheepherding encampments within the study area are probably extensive. They are expected to consist of low circular stone lambing pens, piles of tin cans, and a variety of stone markers. The pens and markers will most frequently be constructed with basalt and no mortar.

Any cultural manifestation in the study area will be significant to some degree for the information it may yield, especially PaleoIndian and Archaic sites. Individual sites will have to be evaluated when they are located.

H. Air

Air quality in the study area is generally good. Winds are primarily from the south and southwest. Some pollution due to the scoria mining operations on the northeast side of San Antonio, occurs when the scoria dust is lifted by strong winds.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

a. Leasable

The US Geological Survey has included the far western portion of the San Antonio Mountain WSA within the Los Pinos Oil and Gas District as prospectively valuable for oil and gas. This is a broad classification, however, and the Taos Resource Area's Minerals Resource Inventory (Contract No. YA-553-CTO-1088, 1981) indicates that there is a lack of favorable reservoir rocks which would seem to preclude the formation and/or retention of petroleum in this specific location.

b. Locatable

Sporadic uranium exploration has occurred in the general vicinity of the WSA (although outside of its boundaries), but no discoveries were made. While there is a possibility of funding uranium within the WSA, this lack of favorable host rocks - e.g., Mesozoic, early Cenozoic Sandstones, or granitic intrusions - would seem to preclude its discovery. However, more detailed information would be needed to confirm this conclusion.

2. Non-Energy Minerals

a. Leasable

Alunite ($KAl_3(OH)_6SO_4$) may occur within the WSA since the mineral is known to occur in volcanic rocks. However, more detailed geologic and geochemical data is needed before an evaluation of the potential for the discovery or development of alunite can be made.

Since virtually all other non-energy leasable minerals are found in sedimentary deposits and the WSA contains a very thin sedimentary sequence, the potential for the discovery and/or development of these types of deposits appears to be very low. The lack of interest in these minerals would seem to confirm this conclusion.

b. Locatable

As the Precambrian rocks that make up the core of the Tusas Mountains are complex and highly metamorphosed, there is a possibility of a massive sulfide (e.g., copper, lead, zinc, molybdenum) discovery within, or near, the WSA. However, inasmuch as virtually no exploration activity has taken place, more data would be required before an evaluation as to the potential for the discovery of massive sulfides can be made.

The fact that flood basalts are generally not known to contain appreciable amounts of metallic minerals, as well as, the apparent lack of major hydrothermal alteration zones or granitic intrusions, would seem to preclude the discovery or development of metallic mineral deposits. Non-metallic deposits are not expected to occur in basaltic deposits. Consequently, the potential for the discovery of any significant locatable mineral deposits, other than massive sulfides, is considered to be low.

c. Saleable

Since the San Antonio Mountain WSA is essentially all Tertiary flood basalt, with perhaps some basaltic cinder cones, the potential for the development of saleable mineral deposits other than cinders (Scoria) and/or crushed rock, is considered to be low.

B. Watershed

Sources of water for wildlife and livestock within the boundaries of the WSA are limited to several catchments and the intermittent flows of the Rio San Antonio.

C. Livestock Grazing

Allotments

Within the Wilderness Study Area there are four allotments affected (Map G-3). All four are cattle allotments, except Allotment 646 which has a dual sheep-cattle permit. The primary season of use is spring-fall. The revision of grazing periods would stress primarily fall-winter use. See Table J-1 Allotment Summary for more information.

Allotments 646 and 583 are currently included in Allotment Management Plans that are in need of revision. The revisions are primarily due to changes in livestock operator control.

R8E | R9E

T32N
T31N

T31N
T30N


**SAN ANTONIO WSA
(NM-010-035)
GRAZING ALLOTMENTS &
IMPROVEMENTS**

—

WSA BOUNDARY

FENCE

ACCESS ROAD



SEEDING

632

ALLOTMENT NUMBER

—

ALLOTMENT BOUNDARY

0

1/2

1

Miles

Scale

MAP G-3

TABLE G-1

ALLOTMENT SUMMARY

Number	Acres	AUM's	WSA Acres	WSA AUM's	% AUM's in WSA
583	4,852	426	2,490	219	51%
584	3,375	445	1,670	220	49%
632	1,870	140	1,870	140	100%
646	4,343	446	1,230	126	28%
TOTALS		1,457	7,260	705	

Source: Allotment Files, Taos Area Office, BLM

Range Improvements

Within the Wilderness Study Area there lies a number of range improvements (Map G-3). Most of the improvements are limited to allotment boundary fences that require maintenance on an annual basis. Additional information is available at the Taos BLM Office.

Access to these improvements are primarily via cross country travel utilizing no established access roads. Grazing permittees have occasional needs of heavy equipment to maintain stocktanks, livestock trails, etc. However, this use occurs rarely.

Potential Improvements

Specific projects have not yet been proposed for this area. However, it may be expected that water developments would be proposed in the future. These developments would likely be in the form of well and catchment installation for livestock and wildlife use.

D. Timber Harvest/Vegetative Sales

No timber harvest or vegetative sales areas exist in the WSA.

E. Recreation

Very little recreation activity occurs in the San Antonio WSA. The little activity which does occur includes ORV use and hiking in the river canyons. Fishing is minimal due to the ephemeral nature of the Rio San Antonio.

The San Antonio Mountain adjacent and to the south of the WSA does receive heavy use by hunters during elk, deer, and antelope hunting seasons. Additional information on hunting pressure, harvest, and success in the Tres Piedras Management Unit which includes the WSA, is available at the Taos BLM Office.

F. Research and Education

No research or education study areas exist in the WSA.

G. Native American Uses, Needs, and Sites

No current use of the study area by native Americans is known at this time.

H. Realty Actions

The only right-of-way present on the edge of the study area is for the telephone line along the eastern boundary (Map G-2). There are no withdrawals, easements, or permits located within the WSA.

I. Wildlife

There are a wide variety of uses by wildlife within the study area. Only those uses of significant value or interest are discussed here. The primary uses are by big game, birds of prey, and predators. The area includes portions of the San Antonio Mountain and Atencio Wildlife Improvement Areas.

Big Game

Virtually all of the study area can be considered yearlong habitat for pronghorn. Herd numbers will vary between 40-120, due to the ingress and egress from the area.

About 50% of the area is an extremely important elk wintering ground and migration route. There is little or no use by elk in the summer months or in the northeastern portion of the study area.

The gorge and southwest corner of the study area can be considered as year-round deer habitat. It is probably used more heavily during the winter months. The Rio San Antonio and the small drainages to the west provide most of the cover and browse for deer in this area.

Birds of Prey

A wide variety of birds of prey will frequent this area. The most important of their uses, however, is the nesting in the canyon. Nesters in the canyon are American kestrel, prairie falcon, and red-tailed hawk.

The canyon has not been extensively inventoried therefore, there may well be other species using this location. The undisturbed nature of the canyon provides an excellent location for the sensitive prairie falcons to raise young. Other probable nesters include Cooper's hawk and the great horned owl.

Predators

The coyotes and gray fox are the primary fur bearers using the area. The extent of trapping in this area is not known. It is likely that the southern portion of the area may be frequented by mountain lion.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The San Antonio Mountain WSA is natural in its general appearance. The Rio San Antonio canyon is the single most discriminating factor in the feeling of naturalness for the area. The views and impressions below the canyon rim are associated more with naturalness due to screening of the canyon walls and the lush riparian vegetation. This is contrasted with the vast open expanse above the canyon rims where impacts of human activities are more apparent. Visible impacts include range improvements, vehicular routes, a scoria mining operation, and utility lines.

The 7,050 acre San Antonio WSA contains approximately six miles of vehicular routes which are used primarily for access to range improvements (allotment boundary fences) and require maintenance on an annual basis. Physical access to the Rio San Antonio canyon is also provided by these routes for recreational use of the canyon area.

A scoria mining operation is located two and one-half miles southeast of the WSA which is noticeable above the canyon rim primarily when winds whip up the light red and black dust around and over the study area.

The most noticeable human impact is the telephone line which extends for the entire seven mile eastern boundary of the WSA. The line is only visible, however, from above the Rio San Antonio canyon rims. Once below the canyon rims, no evidence of human impacts are apparent.

The cumulative effects of these impacts is minimal if viewed below the Rio San Antonio canyon rims. The impact is more considerable from above the canyon rims where wide open space allows more visible evidence of human impacts in and adjacent to the study area. The amount and degree of impacts present do not appreciatively reduce the naturalness of the study area.

b. Solitude

The small size, general lack of screening, location to USFS recreation use areas (hunting, camping, etc.) and rural residential areas to the north make the opportunities for solitude somewhat impacted by human encounters.

These opportunities for solitude are increased when discussing the area of the WSA below the Rio San Antonio canyon rims. Access to the canyon is limited so fewer encounters with humans are anticipated. Above the canyon rims, there is more human activity encountered due to the closeness of US Highway 285, ORV access to USFS recreational lands, and rancher activity in the area.

These impacts on solitude are again mitigated by the vegetative and topographic screening caused by the abrupt drop into the Rio San Antonio canyon which allows the user to find seclusion in the river canyon.

c. Recreation

Opportunities for primitive and unconfined recreational activities are limited in the WSA due to its small size and adjacent location of human activities. Recreational opportunities do include elk, muledeer, and antelope hunting in the vicinity of San Antonio Mountain, located two miles south of the WSA. Hiking and camping are potential activities confined to the Rio San Antonio canyon, but fishing is affected by the ephemeral nature of the stream.

2. Features

The presence of the Rio San Antonio ephemeral water source and the topographic contrast of the canyon cutting through the open plains area make up the WSA's most outstanding special features. The viewing of wildlife which frequent the Rio San Antonio during the flow season of October through June also makes the area important, though the actual wildlife habitat areas are concentrated on San Antonio Mountain, on USFS lands.

The scenic vantage point of the riparian vegetation in the canyon may also be considered a special feature when contrasted with the dry, open sagebrush plain located above and around the canyon rim areas.

3. Multiple Resource Benefits

The San Antonio WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long term protection for these natural values than would administrative designations available to the Bureau.

A more detailed discussion of multiple resource benefits may be found under the impacts of the All Wilderness Alternative.

4. Diversity

Ecosystem/landform diversity was analyzed using the Bailey-Kuchler system to classify the potential natural vegetation expected to occur in Wilderness Study Areas in New Mexico.

According to the Bailey-Kuchler system, the potential natural vegetation of the WSA consists of 5,000 acres of midland shrubs, 2,000 acres of midland grasslands, and less than 1,000 acres of conifer forests and pinyon/juniper woodlands.

The study area is within three hours driving time of Albuquerque, New Mexico.

B. Manageability

Manageability of the San Antonio WSA must include consideration of State lands within the study area, legal and physical access, rights-of-way, uses of adjacent private and United States Forest Service lands, and topography.

Surface inholdings include 1,280 acres of State lands with the primary ingress and egress points going through these New Mexico State owned sections (Map G-1).

The flat, open terrain of the WSA allows for almost unlimited access by ORV use from adjacent United States Forest Service lands where hunter pressure is very high. The entire unit would have to be fenced at a significant expense to prevent access due to lack of topographical barriers. Enforcement of limiting access would also be difficult since cutting the fence for access would be very easy.

The area appears to have low potential for mineral development, so private or State mineral rights would not create incompatible uses occurring in the WSA.

"Grandfathered" rights in the area are associated with livestock operations and maintenance needs of range improvements. All existing livestock operations may continue in the same manner and degree as in the past.

Reasonable access is provided to the State inholdings. This may create a problem of conflicting uses, and the State inholdings would have to be acquired to resolve the consistency of protective management as a Wilderness Area.

Managing the area as wilderness would require fencing of the area and a system of signs or markers to define the Wilderness boundaries. Boundary adjustments would not serve to reduce wilderness manageability

of the area. The lack of topographical barriers to vehicular travel, combined with poorly defined natural boundaries, would create trespass problems from existing use patterns of hunters and ORV users in the area. Public education and increased levels of patrol could be expected to reduce, but not eliminate, these access and use problems.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement has included input during the Rio Grande Management Framework Plan (1979), input throughout the Taos Resource Area Roadless Study and resulting WSA recommendation phase, and the Off-Road Vehicle Designation Plan which included the San Antonio WSA.

Public involvement specifically concerning the San Antonio WSA has been in the form of written comments. Those who expressed support for Wilderness designation discussed the need for a natural situation for antelope and other game due to the WSA's close proximity to the San Antonio Mountain Range and Wildlife Management Area which is limited for use by motor vehicles. Support for wilderness was also based on the need to preserve the characteristic western wheatgrass range and high rolling grasslands which are considered under-represented in the Wilderness Preservation System.

Those opposed to the potential designation of the San Antonio WSA as wilderness expressed concern of Public Land becoming unavailable to ORV users, hunters, and mineral development as well as increasing the restrictions on livestock grazing within a designated Wilderness Area.

The written comments concerning the San Antonio WSA have been retained and used during preparation of this WAR. Opinions expressed in these comments have been considered in preparation of the final recommendations.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 7,050 acres of public land within the San Antonio WSA would be recommended as suitable for wilderness designation.

1. Impacts to minerals

While the San Antonio WSA appears to have a low potential for mineral development, there is a possibility that minerals could be found. Designating the entire WSA as Wilderness could prevent any large scale exploration efforts. Any energy or non-energy minerals that might be within the WSA would remain undiscovered.

2. Impacts to Other Resources and Uses

a) Watershed

No major impacts affecting the surface and ground water within the WSA can be foreseen. Treatment of the watershed would be restricted to nonmotorized equipment under Wilderness designation. Prevention of surface disturbance by vehicles will serve to reduce soil compaction which would improve infiltration rates and decrease surface run-off.

b) Livestock Grazing

Wilderness designation would allow existing range programs to continue, but new range developments may only be allowed if they do not degrade wilderness values. Since existing range programs are "grandfathered" and no new developments are currently planned to be constructed, there would be no significant impact on the range program.

c) Recreation

The All Wilderness Alternative would possibly serve to enhance certain recreation activities such as hiking and backpacking, but would restrict recreation activities which require motorized vehicles. The present hunter use patterns would also be altered under Wilderness management due to the lack of vehicular accessibility.

d) Cultural Resources

Designating the San Antonio WSA as All Wilderness would serve to protect any cultural resources that may be present. Limitations on excavation and stabilization would be in effect, but the State Director has approval authority on a case by case

basis, therefore, the impact would be low.

e) Wildlife

The impacts to wildlife associated with the All Wilderness alternative would primarily be improvement of habitat privacy. The species which would be most benefited is the pronghorn.

B. No Action

Under the No Action Alternative which would recommend the entire area as nonsuitable for wilderness designation, management would continue in accordance with the existing Rio Grande MFP and the ORV Designation Plan for the area. Those existing and potential uses that are presently occurring or that may occur have been identified in Section 3 (Existing and Potential Uses). These uses would continue under this alternative without regard to the Interim Management Policy and Guidelines for Land Under Wilderness Review (1979).

1. Impacts to Wilderness Values

The impacts of nondesignation would not significantly impair the wilderness values of the study area. Though these wilderness values are considered marginal, they would not be protected through this alternative. However, with a low potential for mineral development and no other significant uses identified that would result in the introduction of man-made features or the modification to the natural character of the land, the impact to wilderness values is expected to be minimal.

2. Impacts to Other Resources and Uses

a) Minerals

Though the potential is considered low, mineral exploration and development could continue without protective wilderness stipulations.

b) Watershed

No significant changes in watershed conditions would occur as a result of the No Action Alternative.

c) Livestock Grazing

No impacts to livestock grazing or associated costs as a result of this alternative are expected to occur. All rangeland improvements could be checked and maintained on a convenience basis using motorized equipment.

d) Recreation

This alternative would not impact the present recreation activities taking place because little change is expected under this alternative from the existing conditions. ORV use is restricted to existing routes with no cross country vehicle use allowed.

e) Cultural Resources

Since the San Antonio WSA is in an area where off-road vehicle use is restricted to one existing road, a No Action decision would not seriously affect cultural resources.

f) Wildlife

The No Action Alternative would not have significant impacts to wildlife. Presently there is no apparent or proposed actions identified in the Rio Grande MFP which would disturb the Rio San Antonio canyon.

VII. RECOMMENDED ACTION

A. Proposed Action Description

The recommended action for the San Antonio WSA is the No Action alternative. A total of 7,050 acres would be recommended as nonsuitable for wilderness designation.

B. Rationale

The San Antonio WSA is considered to have marginal wilderness values and would be extremely difficult and expensive to manage as wilderness. With this alternative, minimal degradation of existing wilderness values is likely to occur because wilderness impairing activities are not anticipated. In addition, the management considerations made in the Rio Grande MFP and the ORV plan would provide adequate protective measures and would limit any significant impacts to other resource values and uses.

C. Consistency with Other Plans

The recommended action for the San Antonio WSA does not conflict with any of the current land management decisions in the pertinent management plans for the area.

At this time, there are known inconsistencies between the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place as needed during the public comment period on the Draft EA.

Legal Description

San Antonio

T. 32 N., R. 8 E.,

Section 24, $SE\frac{1}{4}SE\frac{1}{4}$ Section 25, $NE\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}$, $SE\frac{1}{4}$ Section 26, $SW\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$, $SW\frac{1}{4}$, $SE\frac{1}{4}$ Section 34, $NE\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}$, $SE\frac{1}{4}$

Section 35

T. 32 N., R. 8 E.,

Section 19, $SW\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$ Section 30, $NE\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$,
 $NW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}$ Section 31, $NW\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$, $NW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$

T. 31 N., R. 8 E.,

Section 1, $NE\frac{1}{4}$, $NW\frac{1}{4}$, $SW\frac{1}{4}$, $NW\frac{1}{4}NE\frac{1}{4}SE\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$ $SE\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$,
 $SW\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$

Section 3

Section 10

Section 11

Section 12, $NW\frac{1}{4}NE\frac{1}{4}NE\frac{1}{4}$, $NW\frac{1}{4}NE\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$ Section 13, $NW\frac{1}{4}NW\frac{1}{4}NE\frac{1}{4}$, $NW\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$, $NW\frac{1}{4}$, $SW\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}SE\frac{1}{4}$

Section 14

Section 15, $NE\frac{1}{4}$, $SE\frac{1}{4}$ Section 24, $NE\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$,
 $NW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$ Section 25, $NW\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$, $NW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$

GLOSSARY

GLOSSARY

AGRARIAN. Of land or land tenure; of agricultural groups and their welfare.

ALLUVIAL AQUIFER. An aquifer that consists of stream-deposited, unconsolidated clay, silt, sand, and gravel.

ALLUVIAL CHANNEL. The central part of a streambed, in this instance formed on unconsolidated valley fill deposits.

ALLUVIUM. Unconsolidated elastic material deposited by running water, including gravel, sand, silt, clay and various mixtures of these.

ANASAZI. A cultural stage associated with the development of an agricultural economy (ca. A.D. 450-1350 in the central San Juan Basin). This stage encompasses Basketmaker Periods (characterized by basketry and pithouse villages) and Pueblo Periods (characterized by pottery and villages of solid masonry construction).

ANIMAL UNIT (AU). Considered to be one mature (1,000 lb.) cow or its equivalent based upon average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM). The amount of forage required to sustain the equivalent of one cow, one horse, two elk, three Barbary sheep, five domestic sheep, five goats, five deer, or ten antelope for one month.

AQUIFER. A rock unit that contains water and is permeable enough to transmit this water to wells and springs.

ARCHAIC. A cultural stage of mobile, small-game hunter/gatherers (ca. 5500 B.C.-A.D. 450 in the central San Juan Basin).

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). An area within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect the area and prevent irreparable damage to important wilderness, cultural, recreational, paleontological, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

ARROYO. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium. Regional southwest term for wash.

ARTESIAN CONDITIONS. Ground water that is under sufficient pressure (always greater than atmospheric) to rise above the top of the aquifer containing it. This ground water does not necessarily rise to or above the land surface. Artesian is synonymous with confined.

ARTESIAN PRESSURE. Ground water under sufficient pressure to cause the water level in a drilled hole to rise above the top of the rock unit.

ARTIFACT. An object produced or shaped by human workmanship.

BEDROCK AQUIFER. An aquifer that consists of consolidated material.

BRITISH THERMAL UNIT (Btu). The heat needed to raise one pound of water 1° F.
A Btu is equal to 252 calories.

CHACOAN OUTLIERS. More than 70 prehistoric pueblo communities connected by a system of roads and visual communication into a sophisticated socioeconomic complex centering on the Chaco Culture National Historical Park (ca. A.D. 828-1178).

CULTURAL RESOURCE DATA. Cultural resource information embodied in material remains and manifested in studies, notes, records, diaries, analyses, and published and unpublished manuscripts.

CULTURAL RESOURCE INVENTORY CLASSES. Class I - existing data inventory - an inventory study of a defined area designed (1) to provide a narrative overview (cultural resource overview) derived from existing cultural resource information, and (2) to provide a compilation of existing cultural resource site record data on which to base the development of the BLM's site record system. Class II - sampling field inventory - a sample-oriented field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a portion of a defined area in a manner which will allow an objective estimate of the nature and distribution of cultural resources in the entire defined area. The Class II inventory is a tool to be utilized in management and planning activities as an accurate predictor of cultural resources in the area of consideration. The primary area of consideration for the implementation of a Class II inventory is a planning unit. The secondary area is a specific project in which an intensive field inventory (Class III) is not practical or not necessary. Class III - intensive field inventory - an intensive field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a specified area. Upon completion of such inventories in an area, no further cultural resource inventory work normally is needed. A Class III inventory is appropriate on small project areas, all areas to be disturbed, and primary cultural resource areas.

CULTURAL RESOURCE MANAGEMENT. The development and implementation of programs designed to inventory, evaluate, protect, preserve, and/or make beneficial use of cultural resources (including evidence of prehistoric, historic, and recent remains) and the natural resources that figured significantly in cultural systems. The objective of such programs is the conservation, preservation, and protection of cultural values through management, and the scientific study of these resources for the public good.

COMPONENT. The manifestation of any given cultural episode in the history of a locality or a region. Sites containing the residue of a single episode of habitation or other group activity are referred to as single component sites. A site with more than one episode of occupations is referred to as a multicomponent site.

CUESTA. Used in the southwestern U.S. for a sloping plain which is terminated on one side by a steep slope.

CYSTS. A subsurface storage vault usually lined with fire hardened clay. Ranging from a gallon or so in size to some over 6 feet in depth and 2-4 feet wide. Usually located in proximity to living areas and food processing areas. Frequently used as burial crypts.

DISCRETIONARY LEASING. Leasing of certain resources at the discretion of the Bureau.

ECOTYPE. An existing plant community with distinguishable characteristics described in terms of the dominant vegetation present (as per Bailey-Kuchler).

EPHEMERAL ARROYO (INTERMITTENT STREAM). A stream or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is at all times above the water table.

ESCARPMENT. A steep face terminating high lands abruptly.

EVAPOTRANSPIRATION. A collective term meaning the loss of water to the atmosphere from both evaporation and transpiration by vegetation.

FIRE RINGS. A primitive fireplace which consists of stones placed in a small circle on or in the ground.

FORESTRY. Class 1 - Juvenile - Below 12 inches diameter; seedlings, saplings, and poles. Age ranging between 20-80 years. Class 2 - Blackjack Class - Trees have dark bark; relatively short, rapidly tapering bole, a pointed or rounded top, and ascending upper branches. Vigorous growth. Class 3 - Intermediate Age Class - Bark turning from black to yellow or brown. Boles are longer and less tapering than those blackjacks of the same diameter. Growth almost as vigorous as blackjack. Class 4 - Yellow Pine Class - 200 to 300 years old. Reddish yellow or cinnamon brown bark on all sides of the bole (trunk). Large trees.

GRANDFATHERED USES. Means the "continuation of existing mining and grazing uses and mineral leasing in the manner and degree in which the same was being conducted on October 21, 1976.

GULLY EROSION. Erosion of soil or soft rock material by running water that forms distinct narrow channels that are 1 square foot or more in cross-section and that usually carry water only during and immediately after heavy rains or following the rapid melting of ice or snow.

HEMITRYPA. A bryozoan of Silurian to Mississippian age having a fine network superstructure on the obverse side and supported by spines along the carinae.

LEASABLE MINERALS. Minerals such as coal, oil shale, oil and gas, potash, sodium, sulphur in New Mexico and Louisiana, silica deposits in certain parts of Nevada, geothermal resources and all other minerals that may be acquired under the Mineral Leasing Act of 1920, as amended.

LOCATABLE MINERALS. Minerals that may be acquired under the Mining Law, as amended.

MCCARTYS SYNCLINE. A north northeast trending fold in rocks, originating in the vicinity of McCartys, NM and terminating in the Ignacio Chavez Land Grant, in which the strata dip inward from both sides toward an axis.

OSTRACON. A small bivalved animal inhabiting both salt and fresh water. These crustaceans have lived since Ordovician time and have shells which are molted with growth.

PIPING. The formation of underground channels that result in gullies and sinkholes.

RILL EROSION. The development of a channel or channels with less than 1 square foot cross-section, initiated by numerous irregularities in the ground surface and resulting in the uneven removal of surface soil by running water that is concentrated in streamlets of sufficient volume and velocity to generate cutting power. It may be an intermediate process between sheet erosion and gully erosion.

RECREATION MANAGEMENT AREA. Sub-units of Resource Areas that serve as basic land units for recreation management. Each area is identified and managed as a unit based on similar or interdependent recreation values, homogenous or interrelated recreation use, land tenure and use patterns, or administrative efficiency.

SALEABLE MINERALS. Minerals such as common varieties of sand, stone, gravel, cinders, pumice, pumicite and clay that may be acquired under the Minerals Act of 1947, as amended.

SHEET EROSION. Erosion in which thin layers of surface material are gradually removed from sloping land by storm runoff in minute, numerous, and localized pulses of running water flowing overland rather than by streams flowing in well-defined channels.

STANDARD METROPOLITAN STATISTICAL AREAS (SMSA). A county containing at least one city of 50,000 inhabitants or more, plus as many adjacent counties as are metropolitan in character and are socially integrated with that central city or cities.

SUBHORIZONTAL. Approximating the horizontal.

SUPPLEMENTAL VALUES. Those features that include "ecological, geological, or other features of scientific, educational, scenic, or historical value".

TRIBUTARY WATERSHED. A contributory watershed that flows into a larger one.

UNDERSTORY. Those trees and woody species growing under the upper or uppermost canopy layer.

UPLAND EROSION. Generally the wearing away of the land surface by running water, wind, ice, or other geologic agents including such processes as gravitational creep, detachment and movement of soil or rock by water, wind, ice or gravity. Includes rill, sheet and gully erosion.

REFERENCES

REFERENCES

- Bailey, Robert G. 1980. Description of the Ecoregion of the United States. Misc. Publ. No. 1391. Ogden, Ut.
- Clark, Ronnie D. 1973. Rio Puerco Watershed Management Plan (unpublished). Albuquerque, New Mexico.
- Craig, Steven D. 1980. Hydrogeology and Water Resources of the Chico Arroyo/Torrean Wash Area, Sandoval and McKinley Counties, New Mexico. M.S. Thesis. New Mexico Institute of Mining and Technology. Socorro, N. Mex.
- Dortignac, E. J. 1962. An 1890 Irrigation Venture in the Rio Puerco. New Mexico Professional Engineer. Vol. XIV, No. 3.
- Elliott, John Grant. 1979. Evolution of Large Arroyos - The Rio Puerco of New Mexico. M.S. Thesis. Colorado State University. Fort Collins, Colo.
- Kelley, V. C., and Wood, G. H. Jr. 1946. Lucero Uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico: U. S. Geological Survey Oil and Gas Inv. Prelim. Map 47.
- Knight, J. Paul. 1982. Investigation Into the Flora of Several BLM Wilderness Study Areas in the Albuquerque District. New Mexico State Heritage Program, Department of Natural Resources. Santa Fe, New Mexico.
- Kuchler, A. W. 1964. Potential Natural Vegetation of the Conterminous United States, American Geographical Society Special Publication No. 36. New York, New York.
- Moench, R. H. and Schlee, J. S. 1967. Geology and uranium deposits of the Laguna District, New Mexico. U. S. Geological Survey, Prof. Paper 519.
- New Mexico Department of Game and Fish. 1979. Annual Harvest Statistics. Unpublished data.
- New Mexico Soil and Water Conservation Division. 1980. Resource Conservation Act Appraisal. Santa Fe, N. Mex.
- Potter, L. D. and J. C. Krenetsky. May 1967. Plant Succession with Released Grazing on New Mexico Rangelands. Journal of Range Management.
- Tecolote Corporation. 1981. Taos Mineral Resource Inventory. Prepared for Bureau of Land Management, Albuquerque District. Contract No. YA-553-CTO-1088. Albuquerque, N. Mex.
- U. S. Department of Agriculture, Forest Service. 1982. Run Wild III-Wildlife Information Storage and Retrieval System (computer data base). Albuquerque, N. Mex.
- U. S. Department of Agriculture, Soil Conservation Service. 1968. Cabezón Area Soil Survey. Agriculture Experiment Station, Research Report 188.

- _____. 1980. Sandoval Couty Soil Survey (unpublished).
- U. S. Department of Commerce, Bureau of the Census. 1981. 1980 Census of Population and Housing, Preliminary Report--New Mexico. PHC 80-P-33. Washington, D.C.
- U. S. Department of Interior, Bureau of Land Management. 1975. Cabezon Management Framework Plan. Albuquerque, New Mexico.
- _____. 1975. Rio Puerco Environmental Statement Area Forage Inventory (unpublished). Albuquerque, N. Mex.
- _____. 1977. Final Environmental Statement for the Proposed Rio Puerco Livestock Grazing Management Program. Albuquerque, N. Mex.
- _____. 1979a. Final Interim Management Policy and Guidelines for Lands Under Wilderness Review. Washington, D.C.
- _____. 1979b. Ignacio Chavez Grant Intensive Inventory. Albuquerque, N. Mex.
- _____. 1979c. Management Framework Plan: Rio Grande Planning Unit. Albuquerque, N. Mex.
- _____. 1979d. Star Lake-Bisti Regional Coal. Final Enviromental Impact Statement (#FES-INT-79-11). Washington, D.C.
- _____. 1981a. Rio Puerco Raptor Inventory. Albuquerque, N. Mex.
- _____. 1981b. Upper Rio Puerco Wildlife Habitat Management Plan. Albuquerque, N. Mex.
- _____. 1981c. Wilderness Management Policy. Washington, D.C.
- U. S. Department of the Interior, Bureau of Land Management and New Mexico Department of Game and Fish. 1974. Interagency Browse Study - Ignacio Chavez Grant. Unpublished report. Albuquerque, N. Mex.
- U. S. Department of the Interior, Fish and Wildlife Service. 1976. Black-footed Ferret Investigation - Rio Puerco Grazing Impact Statement Area. Unpublished study done under contract to the BLM through the Fish and Wildlife Service. Albuquerque, N. Mex.
- Waite, Donald D. 1972. Rio Puerco Special Project Evaluation Report. Santa Fe, New Mexico.
- Walsh, R. G., Gillman, R. A., and Loomis, J. B. 1981. Wilderness Resource Economics: Recreation Use and Preservation Values. Dept. of Economics, Colorado State University. Fort Collins, Colo.

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Wilderness draft

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